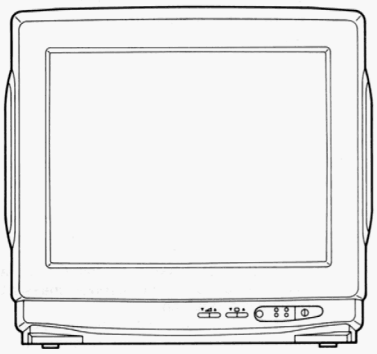
SERVICE DATA
FILE NO. 050-652
PAL-B/G SYSTEM

TOSHIBA

COLOUR TELEVISION

1730TD



SPECIFICATIONS

Input Power Rating:	71 W, AC 220 ~ 240 V, 50 Hz
Aerial Input Impedance:	75 ohm unbalanced type for VHF and UHF
Receiving Channels:	**PAL–B/G Standard** VHF ..... channels 2 to 4, 5 to 12 and S1 to S20 UHF ..... channels 21 to 69
Intermediate Frequencies:	Picture I-F carrier frequency ..... 38.9 MHz Sound I-F carrier frequency ..... 33.4 MHz
Picture Tube:	17 inches, A41EAM11X01 (410 mm measured on diagonal of viewable picture area), 90° deflection
Sound Output:	2 W (at 10% harmonic distortion)
Speakers:	77 mm, round
Aux. Terminals:	21 PIN socket (FULL)
Cabinet:	Plastic portable type
Dimensions:	Height ..... 413 mm Width ..... 450 mm Depth ..... 398 mm
Weight:	13.4 kg

Specifications are subject to change without notice.

Printed in Japan Jul. 1993 (So)

SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" INSTRUCTIONS BELOW.

X-RAY RADIATION PRECAUTION

1. The E.H.T. must be checked every time the receiver is serviced to ensure that the C.R.T. does not emit X-ray radiation as result of excessive E.H.T. voltage. The nominal E.H.T. for this receiver is 25.5 kV at zero beam current (minimum brightness) operating at 220V a.c. The maximum E.H.T. voltage permissible in any operating circumstances must not exceed 27.5 kV. When checking the E.H.T., use the 'High Voltage Check' procedure in this manual using an accurate E.H.T. voltmeter.
2. The only source of X-RAY radiation in this receiver is the C.R.T. To prevent X-ray radiation, the replacement C.R.T. must be identical to the original fitted as specified in the Parts List.
3. Some components used in this receiver have safety related characteristics preventing the C.R.T. from emitting X-ray radiation.
   For continued safety, replacement component should only be made after referring the Product Safety Notice below.

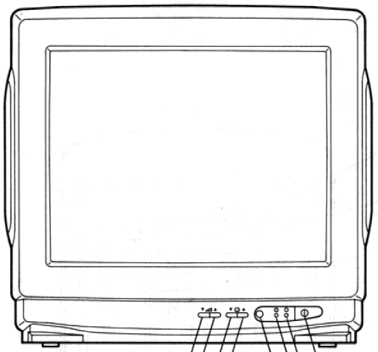
SAFETY PRECAUTION

1. This receiver has a nominal working E.H.T. voltage of 23 kV. Extreme caution should be exercised when working on the receiver with the back removed.
   Do not attempt to service this receiver if you are not conversant with the precautions and procedures for working on high voltage equipment.
   When handling or working on the C.R.T., always discharge the anode to the receiver chassis before removing the anode cap
   The C.R.T., if broken, will violently expel glass fragments. Use shatter proof goggles and take extreme care while handling.
   Do not hold the C.R.T. by the neck as this is a very dangerous practice.
2. It is essential that to maintain the safety of the customer all cable forms be replaced exactly as supplied from factory.
3. A small part of the chassis used in this receiver is, when operating, at approximately half mains potential at all times. It is therefore essential in the interest of safety that when serving or connecting any test equipment the receiver should be supplied via a suitable isolating transformer of adequate rating.
4. Replace blown fuses within the receiver with the fuse specified in the parts list.
5. When replacing wires or components to terminals or tags, wind the leads around the terminal before soldering. When replacing safety components identified by the international hazard symbols on the circuit diagram and parts list, it must be a Toshiba approved type and must be mounted as the original.
6. Keep wires away from high temperature components.

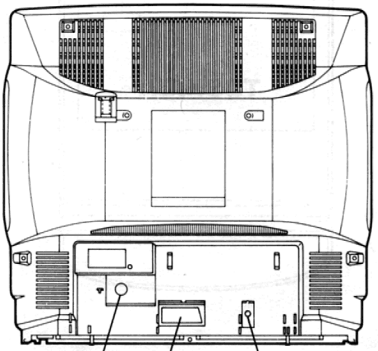
PRODUCT SAFETY NOTICE

Many electrical and mechanical components in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-ray radiation protection afforded by them cannot necessarily be obtained by using replacements rated at higher voltages or wattage, etc.
Components which have these special safety characteristics in this manual and its supplements are identified by the international hazard symbols on the schematic diagram and parts list. Before replacing any of these components read the parts list in this manual carefully. Substitute replacement components which do not have the same safety characteristics as specified in the parts list may create X-ray radiation.

FRONT CONTROLS AND REAR VIEWS

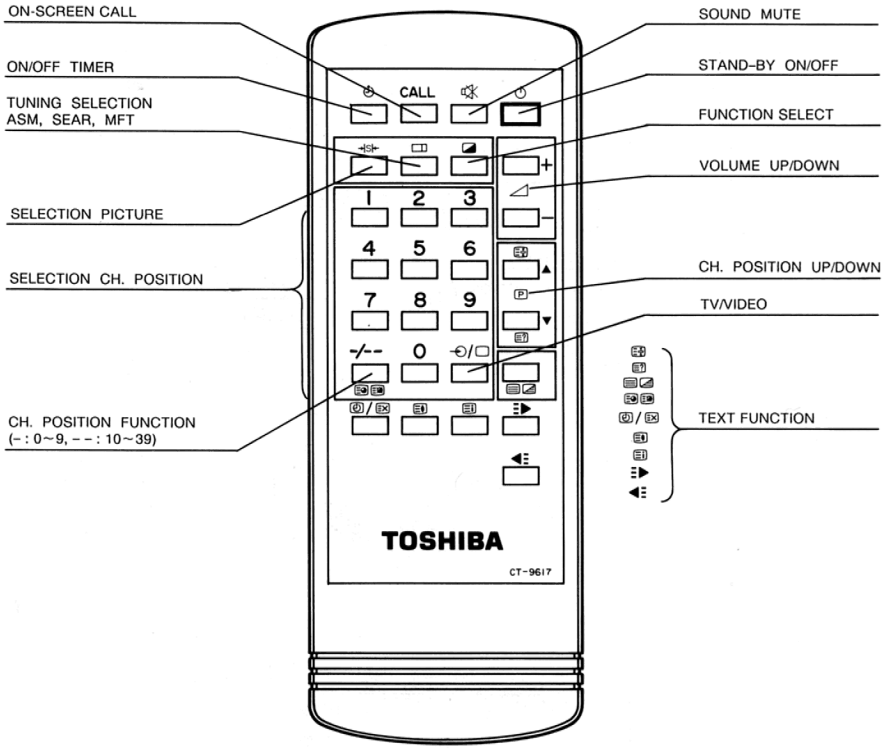


VOL. DN / POWER ON
VOL. UP / POWER ON
POS. DN / POWER ON
POS. UP / POWER ON
MAINS SW.
POWER IND.
ON TIMER IND.
RMT. BEAM RECEIVER



AERIAL SOCKET
21PIN SOCKET (FULL)
H. PICTURE POSITION

REMOTE HAND HELD UNIT



WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUSTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

INSTALLATION AND SERVICE ADJUSTMENTS

GENERAL INFORMATION

All adjustments are thoroughly checked and corrected when the receiver leaves the factory. Therefore the receiver should operate normally and produce proper colour and B/W pictures upon installation. However, several minor adjustments may be required depending on the particular location in which the receiver is operated.

This receiver is shipped completely in cardboard carton. Carefully draw out the receiver from the carton and remove all packing materials. Plug the power cord into a convenient 220 volts 50Hz AC power outlet.

Turn the receiver ON and adjust the FINE TUNING for best picture detail with the AFC turned OFF.

Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST and COLOUR Controls to obtain natural colour or B/W picture.

AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing after moving the receiver is normally unnecessary, providing the receiver is properly degaussed upon installation. The degaussing coil operates for about 1 second after the power to the receiver is switched ON. If the set is moved or faced in a different direction, the power switch must be switched off at least one hour in order that the automatic degaussing circuit operates properly.

Should the chassis or parts of the cabinet become magnetized to cause poor colour purity, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the receiver and slowly withdraw the coil to a distance of about 2 m before disconnecting it from AC source. If colour shading still persists, perform the COLOUR PURITY ADJUSTMENT and CONVERGENCE ADJUSTMENTS procedures, as mentioned later.

HIGH VOLTAGE CHECK

CAUTION: There is no HIGH VOLTAGE ADJUSTMENT on this chassis.

1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST Controls to minimum (zero beam current).
3. High voltage will be measured below 27.5kV.
4. Rotate the BRIGHTNESS Control to both extremes to be sure the high voltage does not exceed the limit of 27.5kV under any conditions.

HEIGHT ADJUSTMENT

1. Receive the UK PHILIPS pattern.
2. Set the contrast, Brightness and Colour to centre.
3. Change the VERT UP/DW SW (S301) so that the white flags on top and bottom of the pattern can be located at the screen centre.
4. Adjust HEIGHT Control (R351) so that the white flags on top and bottom of the pattern are just hidden.

FOCUS ADJUSTMENT

Adjust FOCUS Control on FLYBACK TRANS. (T461) for well defined scanning lines in the centre area on the screen.

RF AGC ADJUSTMENT

1. Tune the set in the strongest station in your area.
2. Turn RF AGC Control (R151) on Main Board to fully counterclockwise position.
3. Adjust RF AGC Control clockwise until noise (snow) just disappears on the screen.

PAL MATRIX ADJUSTMENT

1. Tune in the colour programme PAL Philips pattern.
2. Set the COLOUR Control VR. to obtain the proper colour.
3. If the PAL MATRIX adjustment is in correct, the Venetian Blind would appear in the colour bars area. This case needs the adjustment.
4. At the first, adjust DL PHASE ADJ. Coil (L551) to minimize the Venetian Blind.
5. Next adjust 1H-DL ADJ. VR (R551) to minimize the Blind.
6. If the Venetian Blind still remains, adjust 1H-DL PHASE ADJ. Coil (L551) to minimize the Blind again.
7. Repeat the item 5 and 6 procedures, adjust the R551 and L551 until the Blind does not appear when the capacitor is connected.

CRT GREY SCALE ADJUSTMENT

1. Tune in an active channel.
2. Set the SERVICE SW. (S202) in the "H. LINE" position.
3. Turn the SCREEN Control (on T461) fully counter-clockwise.
4. By rotating the RED, GREEN and BLUE CUT OFF Controls (R557, R558, R559) to the mid position.
5. Set the GREEN and BLUE DRIVE Controls (R252, R253) to the center.
6. Rotate the SCREEN Control gradually clockwise until the first line appears slightly on the screen. Set the SCREEN Control to this position.
7. Adjust the CUT OFF Controls to obtain the slightly lighted horizontal lines in the same levels of three colours (RED, GREEN and BLUE). The lines may look like white if the CUT OFF Controls are adjusted properly.
8. Set the SERVICE SW. (S202) in the "RECEIVE" position.
9. Set the CONTRAST and COLOUR Controls to minimum, and BRIGHTNESS Control to the maximum.
10. Adjust the BLUE and GREEN DRIVE Controls (R252/R253) to obtain proper white-balanced picture in high light areas.
11. Set the BRIGHTNESS and CONTRAST Controls to obtain dark grey raster. Then check the white balance in low brightness. If the white balance is not proper, retouch the CUT OFF Controls and DRIVE Controls to obtain a good white balance in both low and high light areas.

SUB-BRIGHTNESS ADJUSTMENT

1. Tune in a colour programme.
2. Set the CONTRAST Control to the minimum and the BRIGHTNESS Control to the centre.
3. Set the COLOUR Control to the centre.
4. Set the SUB-BRIGHT. Control (R255) to the centre and leave the receiver for five minutes in this state.
5. Watching the picture well, adjust the SUB-BRIGHT. Control in the position where the picture does not show evidence of blooming in high bright area and not appear too dark in low bright portion.
6. Check the proper picture variation by rotating the CONTRAST and BRIGHTNESS Controls to both extremes.
7. If the picture does not appear dark with the CONTRAST and BRIGHTNESS Controls turned to the minimum, or not appear bright with the controls turned to the maximum, adjust the SUB-BRIGHT. Control again for the acceptable picture.

PICTURE I-F TRAP ALIGNMENT

GENERAL ..... Refer to figure 1 for the equipment connection.
PRELIMINARY STEPS ..... 1. Turn the power switch of TV set off.
2. Disconnect the solder link on the foil of Tuner IF OUT.
3. Supply +12 volts to pin 1 of P101 on the IF Board.
SWEEP/MARKER GENERATOR..... Connect to the point ⓓ as shown in figure 1.
OSCILLOSCOPE..... Connect through the detector (See figure 3.) to the emitter of Q162.

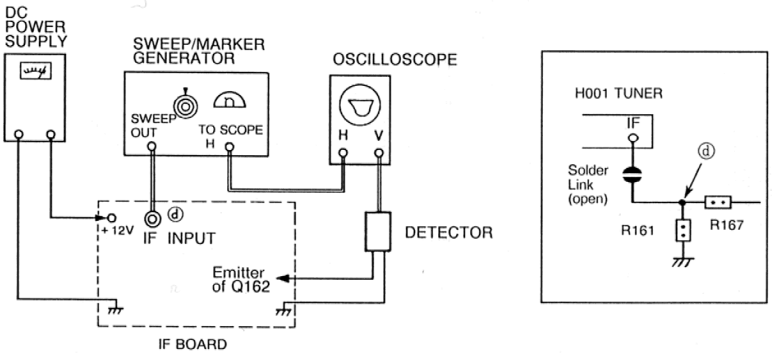


Figure 1.

STEP	SWEEP/MARKER GENERATOR	ADJUST	PROCEDURE
TRAP ALIGNMENT Control the sweep output for easy alignment. Set the IF markers for 40.4MHz (P + 1.5MHz) and 32.4MHz (P –6.5MHz)			
Trap coil TN01	40.4MHz Marker "ON"	TN01	Adjust TN01 so the 40.4MHz marker point is placed at bottom of response. (See figure 2.)
Trap coil TN02	32.4MHz Marker "ON"	TN02	Adjust TN02 so the 32.4MHz marker point is placed at bottom of response. (See figure 2.)

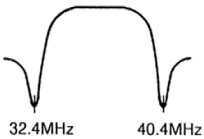


Figure 2. Trap Response

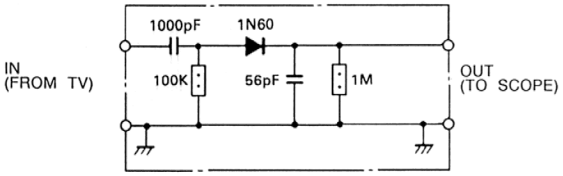


Figure 3. Detector Diagram

PICTURE I-F ALIGNMENT

GENERAL..... Refer to figure 4 for test equipment connection.
PRELIMINARY STEPS ..... 1. Disconnect the solder link on the foil of tuner IF OUT.
2. Supply +12 volts to pin 1 of P101 on the IF Board.
3. Supply +5 to +6 volts to pin 1 of IC101.
IF SIGNAL GENERATOR..... Connect to the point (d) as shown figure 4.
Set to 38.9 MHz with signal level of 70 to 80 dBμ.
DIGITAL VOLTMETER..... Connect to pin 18 of IC101.

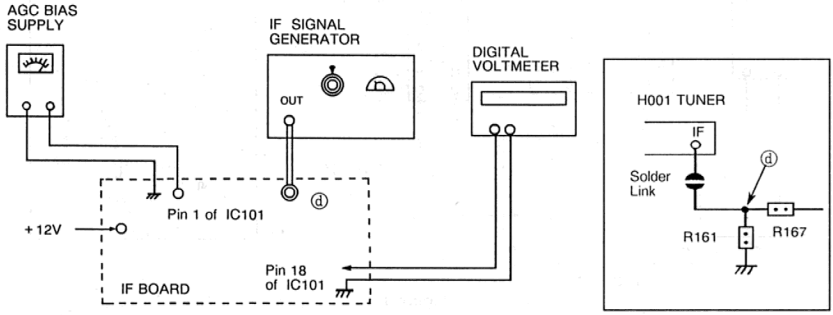


Figure 4. Picture IF Alignment

STEP	IF SIGNAL GENERATOR	ADJUST	REMARKS
VIDEO DET.	38.9 MHz 70 to 80 dBμ	L151	• Adjust L151 for the minimum voltage on the meter.
After completing the above steps, disconnect the equipment and re-solder the links on the Main Board, and adjust the AGC Delay Control (R151) following DELAYED RF AGC ADJUSTMENTS.			

AFC ALIGNMENT

GENERAL ..... Refer to figure 5 for test equipment connection.
PRELIMINARY STEPS ..... 1. Supply +12 volts to pin 1 of P101 on the IF Board.
2. Turn AGC DELAY Control (R151) fully clockwise.
DIGITAL VOLTMETER ..... Connect to the resistor R171 ((e) in figure 6) and ground.

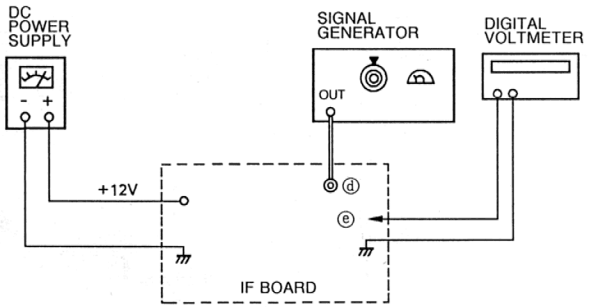
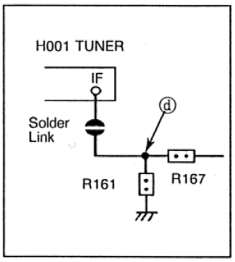


Figure 5. AFC Alignment

STEP	SIGNAL GENERATOR	ADJUST	REMARKS
1. AFC Balance (R152)	NO SIGNAL	R152	• Short the pin 1 of IC101 to ground. • Adjust R152 for 4.5 volts at the point (e) in figure 6.
2. AFC DET. (L152)	38.9 MHz CARRIER WAVE (Level : 70 to 80 dBμ)	L152	• Remove the short of pin 1 of IC101. • Connect IF carrier wave to the point (d) in figure 6. • Adjust L152 for 2.5 volts on the meter at the point (e).



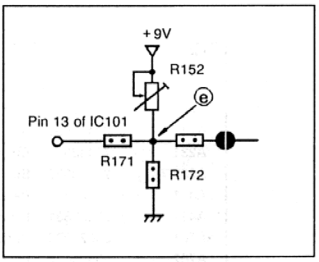
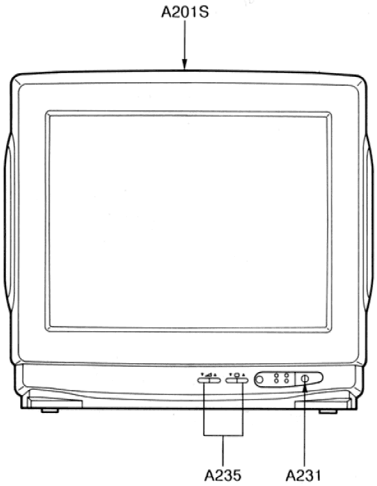
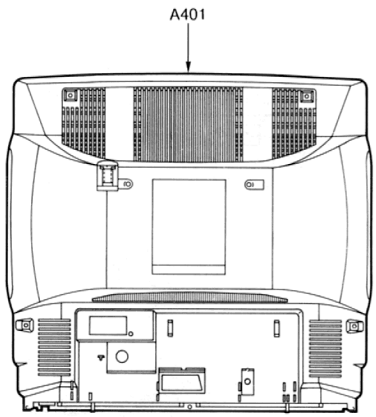


Figure 6.

CABINET REPLACEMENT PARTS LIST





Location No.	Part No.	Description
A201S	23419527	Front Cover
A216	23416501	Speaker Grille
A231	23443649	Button, POWER
A235	23443653	Button, UP-DOWN
A401	23424847	Back Cover
A411	23568631	Label, Model No., B/C
A701	23524073	Carton Box
A702	23935092	Packing, Bottom
A703	23935093	Packing, Top
A710	23568632	Label, Model No., Carton

CHASSIS REPLACEMENT PARTS LIST

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

CAUTION: The international hazard symbols in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

NOTICE: The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.

ABBREVIATIONS:

Capacitors..... CD : Ceramic Disk PF : Plastic Film EL : Electrolytic
Resistors..... CF : Carbon Film CC : Carbon Composition MF : Metal Film
OMF : Oxide Metal Film VR : Variable Resistor FR : Fusible Resistor
(All CD and PF capacitors are ±5%, 50V and all resistors, ±5%, 1/6W unless otherwise noted.)

Location No.	Part No.	Description
CAPACITORS		
C101	24212102	CD, 1000pF, ±10%
C102	24232103	CD, 0.01μF, +80%, –20%
C103	24232103	CD, 0.01μF, +80%, –20%
C104	24206228	EL, 0.22μF, 50V
C105	24232103	CD, 0.01μF, +80%, –20%
C107	24212102	CD, 1000pF, ±10%
C108	24085958	EL, 1μF, ±20%, 50V, Non-Polar
C109	24794101	EL, 100μF, ±20%, 16V
C111	24794470	EL, 47μF, ±20%, 16V
C112	24232103	CD, 0.01μF, +80%, –20%
C116	24232103	CD, 0.01μF, +80%, –20%
C161	24357201	CD, 200pF
C162	24232103	CD, 0.01μF, +80%, –20%
C163	24212102	CD, 1000pF, ±10%
C164	24212102	CD, 1000pF, ±10%
C165	24212102	CD, 1000pF, ±10%
C166	24212102	CD, 1000pF, ±10%
C171	24436220	CD, 22pF
C172	24212102	CD, 1000pF, ±10%
C201	24797100	EL, 10μF, ±20%, 50V
C202	24795101	EL, 100μF, ±20%, 25V
C203	24232103	CD, 0.01μF, +80%, –20%
C204	24797220	EL, 22μF, ±20%, 50V
C205	24797478	EL, 0.47μF, ±20%, 50V
C208	24212102	CD, 1000pF, ±10%
C209	24232103	CD, 0.01μF, +80%, –20%
C210	24797100	EL, 10μF, ±20%, 50V
C211	24474561	CD, 560pF, ±10%
C212	24797010	EL, 1μF, ±20%, 50V
C213	24590104	PF, 0.1μF
C240	24538474	PF, 0.47μF
C301	24085944	EL, 2.2μF, ±20%, 50V, Non-Polar
C302	24212152	CD, 1500pF, ±10%
C303	24617912	EL, 2.2μF, ±10%, 50V
C304	24212102	CD, 1000pF, ±10%
C307	24232103	CD, 0.01μF, +80%, –20%
C312	24590153	PF, 0.015μF
C313	24668101	EL, 100μF, ±20%, 35V

Location No.	Part No.	Description
C314	24796102	EL, 1000μF, ±20%, 35V
C315	24214221	CD, 220pF, ±10%, 500V
C316	24667332	EL, 3300μF, ±20%, 25V
C317	24617912	EL, 2.2μF, ±10%, 50V
C318	24214332	CD, 3300pF, ±10%, 500V
C319	24693104	PF, 0.1μF, 100V
C321	24214391	CD, 390pF, ±10%, 500V
C328	24082257	PF, 2700pF, 100V
C368	24590104	PF, 0.1μF
C402	24353241	CD, 240pF
C403	24797339	EL, 3.3μF, ±20%, 50V
C405	24590203	PF, 0.02μF
C406	24590203	PF, 0.02μF
C407	24590243	PF, 0.024μF
C408	24797100	EL, 10μF, ±20%, 50V
C409	24232103	CD, 0.01μF, +80%, –20%
C412	24590182	PF, 1800pF
C413	24590182	PF, 1800pF
C414	24474151	CD, 150pF, ±10%
C416	24214271	CD, 270pF, ±10%, 500V
⚠C440	24095892	PF, 6800pF, ±3%, 1250V
C441	24214221	CD, 220pF, ±10%, 500V
C443	24214221	CD, 220pF, ±10%, 500V
C445	24095903	PF, 0.056μF, ±10%, 250V
C447	24700479	EL, 4.7μF, ±20%, 250V
C448	24795222	EL, 2200μF, ±20%, 25V
C449	24794471	EL, 470μF, ±20%, 16V
C451	24640908	EL, 33μF, ±20%, 160V
⚠C463	24212222	CD, 2200pF, ±10%
C465	24095949	PF, 0.33μF, 200V
C470	24212102	CD, 1000pF, ±10%
C503	24474181	CD, 180pF, ±10%
C504	24474181	CD, 180pF, ±10%
C505	24590273	PF, 0.027μF
C506	24232103	CD, 0.01μF, +80%, –20%
C507	24590103	PF, 0.01μF
C508	24085944	EL, 2.2μF, ±20%, 50V, Non-Polar
C509	24797220	EL, 22μF, ±20%, 50V
C510	24232103	CD, 0.01μF, +80%, –20%
C511	24232103	CD, 0.01μF, +80%, –20%

Location No.	Part No.	Description
C512	24353200	CD, 20pF
C513	24353330	CD, 33pF
C515	24797220	EL, 22μF, ±20%, 50V
C516	24590104	PF, 0.1μF
C517	24590104	PF, 0.1μF
C518	24232103	CD, 0.01μF, +80%, −20%
C519	24232103	CD, 0.01μF, +80%, −20%
C520	24797229	EL, 2.2μF, ±20%, 50V
C521	24797478	EL, 0.47μF, ±20%, 50V
C522	24797478	EL, 0.47μF, ±20%, 50V
C523	24797478	EL, 0.47μF, ±20%, 50V
C524	24232103	CD, 0.01μF, +80%, −20%
C525	24474820	CD, 82pF, ±10%
C526	24474820	CD, 82pF, ±10%
C527	24474820	CD, 82pF, ±10%
C530	24796220	EL, 22μF, ±20%, 35V
C531	24794100	EL, 10μF, ±20%, 16V
C532	24436101	CD, 100pF
C533	24436101	CD, 100pF
C534	24436101	CD, 100pF
C535	24797100	EL, 10μF, ±20%, 50V
C540	24436151	CD, 150pF
C541	24436151	CD, 150pF
C542	24436151	CD, 150pF
C551	24212102	CD, 1000pF, ±10%
C590	24794101	EL, 100μF, ±20%, 16V
C591	24797478	EL, 0.47μF, ±20%, 50V
C601	24436470	CD, 47pF
C602	24436470	CD, 47pF
C603	24232103	CD, 0.01μF, +80%, −20%
C604	24212272	CD, 2700pF, ±10%
C605	24232103	CD, 0.01μF, +80%, −20%
C606	24353680	CD, 68pF
C610	24232103	CD, 0.01μF, +80%, −20%
C611	24232103	CD, 0.01μF, +80%, −20%
C612	24797010	EL, 1μF, ±20%, 50V
C615	24794101	EL, 100μF, ±20%, 16V
C662	24590104	PF, 0.1μF
C663	24590682	PF, 6800pF
C664	24797010	EL, 1μF, ±20%, 50V
C665	24795221	EL, 220μF, ±20%, 25V
C666	24590104	PF, 0.1μF
C667	24474101	CD, 100pF, ±10%
C668	24797478	EL, 0.47μF, ±20%, 50V
C670	24590104	PF, 0.1μF
C671	24232103	CD, 0.01μF, +80%, −20%
C691	24797339	EL, 3.3μF, ±20%, 50V
C697	24590104	PF, 0.1μF
C699	24795470	EL, 47μF, ±20%, 25V
⚠C801	24098999	PF, 0.1μF, ±20%, AC250V
⚠C805	24094656	CD, 2200pF, ±20%, AC400V
⚠C806	24094656	CD, 2200pF, ±20%, AC400V
⚠C815	24092281	CD, 4700pF, ±20%, AC250V
⚠C816	24092281	CD, 4700pF, ±20%, AC250V
⚠C817	24092281	CD, 4700pF, ±20%, AC250V
⚠C818	24092281	CD, 4700pF, ±20%, AC250V
C820	24086871	EL, 120μF, ±20%, 400V
C821	24436101	CD, 100pF
C822	24797100	EL, 10μF, ±20%, 50V
C823	24590682	PF, 6800pF
C824	24630747	EL, 22μF, ±20%, 25V
C825	24212102	CD, 1000pF, ±10%
C826	24092339	CD, 330pF, ±10%, 2kV
C827	24232103	CD, 0.01μF, +80%, −20%

Location No.	Part No.	Description
C828	24095914	PF, 2200pF, ±3%, 1250V
C829	24797010	EL, 1μF, ±20%, 50V
C830	24797101	EL, 100μF, ±20%, 50V
C831	24436331	CD, 330pF
C832	24590822	PF, 8200pF
C833	24092336	CD, 180pF, ±10%, 2kV
C834	24086953	EL, 220μF, ±20%, 160V
C835	24797220	EL, 22μF, ±20%, 50V
C836	24214331	CD, 330pF, ±10%, 500V
C837	24795471	EL, 470μF, ±20%, 25V
C838	24795102	EL, 1000μF, ±20%, 25V
C840	24794101	EL, 100μF, ±20%, 16V
C901	24700479	EL, 4.7μF, ±20%, 250V
C902	24095923	PF, 4700pF, 1250V
CA01	24474331	CD, 330pF, ±10%
CA02	24232103	CD, 0.01μF, +80%, −20%
CA07	24212102	CD, 1000pF, ±10%
CA08	24232103	CD, 0.01μF, +80%, −20%
CA09	24794470	EL, 47μF, ±20%, 16V
CA10	24232103	CD, 0.01μF, +80%, −20%
CA11	24212472	CD, 4700pF, ±10%
CA12	24212561	CD, 560pF, ±10%
CA13	24794100	EL, 10μF, ±20%, 16V
CA14	24794470	EL, 47μF, ±20%, 16V
CA15	24232103	CD, 0.01μF, +80%, −20%
CA16	24232103	CD, 0.01μF, +80%, −20%
CA17	24232103	CD, 0.01μF, +80%, −20%
CA18	24232103	CD, 0.01μF, +80%, −20%
CA19	24232103	CD, 0.01μF, +80%, −20%
CA20	24797010	EL, 1μF, ±20%, 50V
CA21	24474391	CD, 390pF, ±10%
CA22	24474221	CD, 220pF, ±10%
CA23	24538224	PF, 0.22μF
CA24	24538334	PF, 0.33μF
CA25	24797229	EL, 2.2μF, ±20%, 50V
CA26	24232103	CD, 0.01μF, +80%, −20%
CA28	24538334	PF, 0.33μF
CA31	24232103	CD, 0.01μF, +80%, −20%
CA32	24794471	EL, 470μF, ±20%, 16V
CA33	24232103	CD, 0.01μF, +80%, −20%
CA34	24232103	CD, 0.01μF, +80%, −20%
CA35	24590102	PF, 1000pF
CA36	24590104	PF, 0.1μF
CA37	24232103	CD, 0.01μF, +80%, −20%
CA39	24232103	CD, 0.01μF, +80%, −20%
CA40	24232103	CD, 0.01μF, +80%, −20%
CA42	24797479	EL, 4.7μF, ±20%, 50V
CB01	24474101	CD, 100pF, ±10%
CF01	24814103	Chip, 0.01μF, +80%, −20%
CF02	24797100	EL, 10μF, ±20%, 50V
CF03	24794470	EL, 47μF, ±20%, 16V
CF04	24085944	EL, 2.2μF, ±20%, 50V, Non-Polar
CF05	24590683	PF, 0.068μF
CF06	24781221	Chip, 220pF, SL
CF07	24815561	Chip, 560pF, ±10%
CF08	24590473	PF, 0.047μF
CF09	24774180	Chip, 18pF
CF11	24590473	PF, 0.047μF
CF12	24794470	EL, 47μF, ±20%, 16V
CF13	24814103	Chip, 0.01μF, +80%, −20%
CF14	24814103	Chip, 0.01μF, +80%, −20%
CF15	24781101	Chip, 100pF, SL
CF16	24262180	Chip, 18pF

Location No.	Part No.	Description
CF19	24794100	EL, 10μF, ±20%, 16V
CF20	24781150	Chip, 15pF, SL
CF21	24590102	PF, 1000pF
CF22	24815471	Chip, 470pF, ±10%
CF23	24590223	PF, 0.022μF
CF24	24781271	Chip, 270pF, SL
CF25	24781101	Chip, 100pF, SL
CF26	24774150	Chip, 15pF, CH
CF27	24781270	Chip, 27pF, SL
CF28	24814103	Chip, 0.01μF, +80%, −20%
CF81	24794470	EL, 47μF, ±20%, 16V
CF82	24794470	EL, 47μF, ±20%, 16V
CF83	24232103	CD, 0.01μF, +80%, −20%
CH01	24797010	EL, 1μF, ±20%, 50V
CH02	24797010	EL, 1μF, ±20%, 50V
CH03	24797010	EL, 1μF, ±20%, 50V
CH04	24797010	EL, 1μF, ±20%, 50V
CH05	24797010	EL, 1μF, ±20%, 50V
CH06	24797010	EL, 1μF, ±20%, 50V
CH07	24797100	EL, 10μF, ±20%, 50V
CM05	24232103	CD, 0.01μF, +80%, −20%
CM07	24232103	CD, 0.01μF, +80%, −20%
CM08	24232103	CD, 0.01μF, +80%, −20%
CN02	24436150	CD, 15pF
CN07	24473390	CD, 39pF
CN10	24474101	CD, 100pF, ±10%
CV01	24797100	EL, 10μF, ±20%, 50V
CV02	24797100	EL, 10μF, ±20%, 50V
CV04	24794101	EL, 100μF, ±20%, 16V
CV05	24232103	CD, 0.01μF, +80%, −20%
CV06	24797479	EL, 4.7μF, ±20%, 50V
CV07	24797100	EL, 10μF, ±20%, 50V
CV08	24797010	EL, 1μF, ±20%, 50V
CV09	24794101	EL, 100μF, ±20%, 16V
CV10	24794100	EL, 10μF, ±20%, 16V
CV11	24797229	EL, 2.2μF, ±20%, 50V
CV12	24232103	CD, 0.01μF, +80%, −20%
CV24	24794471	EL, 470μF, ±20%, 16V
CV25	24212102	CD, 1000pF, ±10%
CV26	24232103	CD, 0.01μF, +80%, −20%
CV27	24794100	EL, 10μF, ±20%, 16V
CV29	24085944	EL, 2.2μF, ±20%, 50V, Non-Polar
CV30	24212221	CD, 220pF, ±10%
CX02	24797478	EL, 0.47μF, ±20%, 50V
CX03	24797478	EL, 0.47μF, ±20%, 50V
CX04	24797478	EL, 0.47μF, ±20%, 50V

RESISTORS

R101	24366152	CF, 1500 ohm
R103	24366152	CF, 1500 ohm
R104	24366103	CF, 10k ohm
R105	24366104	CF, 100k ohm
R106	24366562	CF, 5600 ohm
R107	24366562	CF, 5600 ohm
R108	24366222	CF, 2200 ohm
R109	24366332	CF, 3300 ohm
R110	24366103	CF, 10k ohm
R113	24383560	OMF, 56 ohm, 2W
R115	24366101	CF, 100 ohm
R116	24366102	CF, 1k ohm
R117	24366221	CF, 220 ohm
R118	24552151	OMF, 150 ohm, 1/2W
R119	24366682	CF, 6800 ohm

Location No.	Part No.	Description
R120	24366332	CF, 3300 ohm
R121	24366271	CF, 270 ohm
R122	24366271	CF, 270 ohm
R123	24366101	CF, 100 ohm
R125	24366101	CF, 100 ohm
R151	24066953	VR, 5k ohm, 1/10W
R152	24066946	VR, 1M ohm, 1/10W
R161	24366131	CF, 130 ohm
R164	24552101	OMF, 100 ohm, 1/2W
R166	24366680	CF, 68 ohm
R167	24366151	CF, 150 ohm
R168	24366562	CF, 5600 ohm
R169	24366561	CF, 560 ohm
R171	24366102	CF, 1k ohm
R172	24366184	CF, 180k ohm
R203	24366182	CF, 1800 ohm
R204	24366152	CF, 1500 ohm
R205	24366182	CF, 1800 ohm
R208	24366101	CF, 100 ohm
R209	24366103	CF, 10k ohm
R210	24366203	CF, 20k ohm
R211	24366622	CF, 6200 ohm
R212	24366103	CF, 10k ohm
R213	24366101	CF, 100 ohm
R214	24366182	CF, 1800 ohm
R215	24366152	CF, 1500 ohm
R216	24366333	CF, 33k ohm
R217	24366101	CF, 100 ohm
R218	24366472	CF, 4700 ohm
R219	24366472	CF, 4700 ohm
R220	24366753	CF, 75k ohm
R221	24366564	CF, 560k ohm
R222	24366751	CF, 750 ohm
R223	24366103	CF, 10k ohm
R224	24366333	CF, 33k ohm
R225	24366152	CF, 1500 ohm
R226	24366104	CF, 100k ohm
R227	24366105	CF, 1M ohm
R228	24366104	CF, 100k ohm
R229	24366303	CF, 30k ohm
R230	24366102	CF, 1k ohm
R232	24366473	CF, 47k ohm
R233	24366302	CF, 3k ohm
R234	24366102	CF, 1k ohm
R235	24366473	CF, 47k ohm
R241	24366101	CF, 100 ohm
R242	24366223	CF, 22k ohm
R243	24366223	CF, 22k ohm
R252	24066597	VR, 1k ohm, 1/10W
R253	24066597	VR, 1k ohm, 1/10W
R255	24066601	VR, 20k ohm, 1/10W
R301	24366201	CF, 200 ohm
R302	24366244	CF, 240k ohm
R303	24366273	CF, 27k ohm
R304	24366102	CF, 1k ohm
R305	24366161	CF, 160 ohm
R306	24366471	CF, 470 ohm
R309	24366102	CF, 1k ohm
R311	24366242	CF, 2400 ohm
R316	24552821	OMF, 820 ohm, 1/2W
R317	24383391	OMF, 390 ohm, 2W
R318	24366153	CF, 15k ohm
R321	24366153	CF, 15k ohm
R322	24366244	CF, 240k ohm

Location No.	Part No.	Description
R323	24322169	OMF, 1.6 ohm, 1W
R325	24552122	OMF, 1200 ohm, 1/2W
⚠R327	24000192	FR, 6.8 ohm, 1W
R329	24552472	OMF, 4700 ohm, 1/2W
R333	24366102	CF, 1k ohm
R351	24066602	VR, 50k ohm, 1/10W
R377	24366184	CF, 180k ohm
R378	24366824	CF, 820k ohm
R380	24366153	CF, 15k ohm
R402	24366273	CF, 27k ohm
R403	24366302	CF, 3k ohm
R404	24552432	OMF, 4300 ohm, 1/2W
R405	24366511	CF, 510 ohm
R407	24366151	CF, 150 ohm
R408	24366682	CF, 6800 ohm
R411	24366391	CF, 390 ohm
R412	24366121	CF, 120 ohm
R416	24510182	Cement, 1800 ohm, 5W
R419	24366510	CF, 51 ohm
R420	24009951	OMF, 1k ohm, 1W
R421	24366105	CF, 1M ohm
R440	24376333	CF, 33k ohm, 1/2W
R441	24376333	CF, 33k ohm, 1/2W
R442	24382751	OMF, 750 ohm, 1W
R444	24569479	Cement, 4.7 ohm, 10W
⚠R448	24322209	OMF, 2 ohm, 1W
R451	24066601	VR, 20k ohm, 1/10W
R452	24069547	VR, 5k ohm, 0.08W, CC
R501	24366561	CF, 560 ohm
R502	24366683	CF, 68k ohm
R503	24366202	CF, 2k ohm
R504	24366471	CF, 470 ohm
R505	24366822	CF, 8200 ohm
R507	24366822	CF, 8200 ohm
R508	24366561	CF, 560 ohm
R509	24366273	CF, 27k ohm
R510	24366101	CF, 100 ohm
R511	24366822	CF, 8200 ohm
R512	24366152	CF, 1500 ohm
R513	24366152	CF, 1500 ohm
R515	24366221	CF, 220 ohm
R516	24366221	CF, 220 ohm
R517	24366221	CF, 220 ohm
R521	24366562	CF, 5600 ohm
R522	24366185	CF, 1.8M ohm
R523	24366102	CF, 1k ohm
R529	24510562	Cement, 5600 ohm, 5W
R533	24366332	CF, 3300 ohm
R535	24366681	CF, 680 ohm
R537	24366332	CF, 3300 ohm
R538	24366681	CF, 680 ohm
R539	24366332	CF, 3300 ohm
R541	24366821	CF, 820 ohm
R542	24366241	CF, 240 ohm
R543	24366103	CF, 10k ohm
R547	24366102	CF, 1k ohm
R548	24366102	CF, 1k ohm
R549	24366102	CF, 1k ohm
R551	24066955	VR, 1k ohm, 1/10W
R557	24066600	VR, 10k ohm, 1/10W
R558	24066600	VR, 10k ohm, 1/10W
R559	24066600	VR, 10k ohm, 1/10W
R565	24366560	CF, 56 ohm
R566	24366560	CF, 56 ohm

Location No.	Part No.	Description
R567	24366560	CF, 56 ohm
R568	24366102	CF, 1k ohm
R570	24366272	CF, 2700 ohm
R571	24366272	CF, 2700 ohm
R572	24366272	CF, 2700 ohm
R580	24366181	CF, 180 ohm
R581	24366681	CF, 680 ohm
R591	24383153	OMF, 15k ohm, 2W
R592	24383153	OMF, 15k ohm, 2W
R593	24383153	OMF, 15k ohm, 2W
R596	24366101	CF, 100 ohm
R601	24366471	CF, 470 ohm
R602	24366563	CF, 56k ohm
R603	24366563	CF, 56k ohm
R604	24366102	CF, 1k ohm
R606	24366221	CF, 220 ohm
R610	24366124	CF, 120k ohm
R611	24366103	CF, 10k ohm
R617	24366102	CF, 1k ohm
R618	24366103	CF, 10k ohm
R619	24366101	CF, 100 ohm
R621	24366562	CF, 5600 ohm
R622	24366473	CF, 47k ohm
R660	24366101	CF, 100 ohm
R661	24366333	CF, 33k ohm
R662	24323229	OMF, 2.2 ohm, 2W
R663	24366223	CF, 22k ohm
R664	24366104	CF, 100k ohm
R666	24366152	CF, 1500 ohm
R667	24366152	CF, 1500 ohm
R668	24366133	CF, 13k ohm
R690	24366273	CF, 27k ohm
R691	24366103	CF, 10k ohm
R692	24366273	CF, 27k ohm
R693	24366223	CF, 22k ohm
R694	24366103	CF, 10k ohm
R695	24366339	CF, 3.3 ohm
R696	24366223	CF, 22k ohm
R697	24366224	CF, 220k ohm
R698	24366472	CF, 4700 ohm
R699	24366332	CF, 3300 ohm
⚠R801	24004914	Metal Glazed Resistor, 5.6M ohm, 1/2W
R802	24569689	Cement, 6.8 ohm, 10W
R810	24377334	CF, 330k ohm, 1W
R813	24321398	OMF, 0.39 ohm, 1/2W
R814	24366823	CF, 82k ohm
R815	24366221	CF, 220 ohm
R816	24367122	CF, 1200 ohm, ±2%
R817	24321398	OMF, 0.39 ohm, 1/2W
R818	24510103	Cement, 10k ohm, 5W
R819	24366689	CF, 6.8 ohm
R820	24366102	CF, 1k ohm
R821	24568181	Cement, 180 ohm, 7W
R823	24367562	CF, 5600 ohm, ±2%
R824	24366123	CF, 12k ohm
R825	24382620	OMF, 62 ohm, 1W
R826	24510822	Cement, 8200 ohm, 5W
R828	24367102	CF, 1k ohm, ±2%
R829	24382473	OMF, 47k ohm, 1W
R830	24366272	CF, 2700 ohm
R831	24366103	CF, 10k ohm
R832	24383331	OMF, 330 ohm, 2W
R836	24556109	FR, 1 ohm, ±10%, 1/2W

Location No.	Part No.	Description
R837	24322758	OMF, 0.75 ohm, 1W
R838	24366392	CF, 3900 ohm
R840	24366101	CF, 100 ohm
R841	24366103	CF, 10k ohm
R842	24376154	CF, 150k ohm, 1/2W
R843	24366392	CF, 3900 ohm
R851	24066954	VR, 2k ohm, 1/10W
⚠R890	24000630	PTC Thermistor, Dual
R901	24946272	CC, 2700 ohm, ±10%, 1/2W
R902	24946272	CC, 2700 ohm, ±10%, 1/2W
R903	24946272	CC, 2700 ohm, ±10%, 1/2W
⚠R920	24000890	FR, 1.6 ohm, 1W
RA01	24366102	CF, 1k ohm
RA05	24366102	CF, 1k ohm
RA06	24366102	CF, 1k ohm
RA07	24366102	CF, 1k ohm
RA08	24366102	CF, 1k ohm
RA09	24366103	CF, 10k ohm
RA10	24366102	CF, 1k ohm
RA11	24366472	CF, 4700 ohm
RA12	24366101	CF, 100 ohm
RA13	24366472	CF, 4700 ohm
RA14	24366102	CF, 1k ohm
RA15	24366102	CF, 1k ohm
RA17	24366102	CF, 1k ohm
RA19	24366103	CF, 10k ohm
RA20	24366102	CF, 1k ohm
RA22	24366103	CF, 10k ohm
RA23	24366471	CF, 470 ohm
RA24	24366102	CF, 1k ohm
RA25	24366103	CF, 10k ohm
RA27	24366392	CF, 3900 ohm
RA28	24366471	CF, 470 ohm
RA30	24366331	CF, 330 ohm
RA31	24366102	CF, 1k ohm
RA33	24366103	CF, 10k ohm
RA35	24366103	CF, 10k ohm
RA36	24366102	CF, 1k ohm
RA38	24366103	CF, 10k ohm
RA39	24366153	CF, 15k ohm
RA40	24366473	CF, 47k ohm
RA41	24366103	CF, 10k ohm
RA42	24366473	CF, 47k ohm
RA43	24366153	CF, 15k ohm
RA44	24366102	CF, 1k ohm
RA45	24366223	CF, 22k ohm
RA46	24000245	MF, 33k ohm, ±1%, 1/4W
RA47	24366301	CF, 300 ohm
RA48	24000637	MF, 15k ohm, ±1%, 1/4W
RA49	24366103	CF, 10k ohm
RA60	24366103	CF, 10k ohm
RA61	24366225	CF, 2.2M ohm
RA62	24366103	CF, 10k ohm
RA64	24946226	CC, 22M ohm, ±10%, 1/2W
RA67	24366273	CF, 27k ohm
RA68	24366223	CF, 22k ohm
RA69	24366563	CF, 56k ohm
RA70	24366393	CF, 39k ohm
RA73	24366223	CF, 22k ohm
RA74	24366223	CF, 22k ohm
RA75	24366102	CF, 1k ohm
RA78	24366103	CF, 10k ohm
RA79	24366152	CF, 1500 ohm
RA86	24366392	CF, 3900 ohm

Location No.	Part No.	Description
RA87	24366103	CF, 10k ohm
RA88	24366102	CF, 1k ohm
RA90	24366564	CF, 560k ohm
RA91	24366102	CF, 1k ohm
RA97	24383103	OMF, 10k ohm, 2W
RB01	24366333	CF, 33k ohm
RB03	24366103	CF, 10k ohm
RB04	24366103	CF, 10k ohm
RB05	24366332	CF, 3300 ohm
RB06	24366473	CF, 47k ohm
RC06	24366222	CF, 2200 ohm
RC08	24366222	CF, 2200 ohm
RF01	24872101	Chip, 100 ohm, 1/16W
RF02	24872152	Chip, 1500 ohm, 1/16W
RF03	24872472	Chip, 4700 ohm, 1/16W
RF04	24872472	Chip, 4700 ohm, 1/16W
RF05	24872223	Chip, 22k ohm, 1/16W
RF06	24872152	Chip, 1500 ohm, 1/16W
RF07	24872102	Chip, 1k ohm, 1/16W
RF08	24872152	Chip, 1500 ohm, 1/16W
RF09	24872473	Chip, 47k ohm, 1/16W
RF10	24872152	Chip, 1500 ohm, 1/16W
RF11	24872683	Chip, 68k ohm, 1/16W
RF12	24872102	Chip, 1k ohm, 1/16W
RF13	24872102	Chip, 1k ohm, 1/16W
RF14	24872122	Chip, 1200 ohm, 1/16W
RF15	24872102	Chip, 1k ohm, 1/16W
RF16	24872331	Chip, 330 ohm, 1/16W
RF17	24872102	Chip, 1k ohm, 1/16W
RF18	24872102	Chip, 1k ohm, 1/16W
RF19	24872105	Chip, 1M ohm, 1/16W
RF20	24872331	Chip, 330 ohm, 1/16W
RF21	24872223	Chip, 22k ohm, 1/16W
RF22	24872223	Chip, 22k ohm, 1/16W
RF23	24872223	Chip, 22k ohm, 1/16W
RF24	24872332	Chip, 3300 ohm, 1/16W
RF25	24872103	Chip, 10k ohm, 1/16W
RF26	24872103	Chip, 10k ohm, 1/16W
RF27	24872103	Chip, 10k ohm, 1/16W
RF28	24872102	Chip, 1k ohm, 1/16W
RF29	24872471	Chip, 470 ohm, 1/16W
⚠RF80	24531100	FR, 10 ohm, 1/2W
RF81	24383123	OMF, 12k ohm, 2W
⚠RF83	24531100	FR, 10 ohm, 1/2W
RF84	24366122	CF, 1200 ohm
RH01	24366102	CF, 1k ohm
RH02	24366152	CF, 1500 ohm
RH03	24366102	CF, 1k ohm
RH04	24366102	CF, 1k ohm
RH05	24366102	CF, 1k ohm
RH06	24366153	CF, 15k ohm
RH07	24366181	CF, 180 ohm
RH08	24366153	CF, 15k ohm
RH09	24366181	CF, 180 ohm
RH10	24366153	CF, 15k ohm
RH11	24366181	CF, 180 ohm
RH12	24366102	CF, 1k ohm
RH32	24366332	CF, 3300 ohm
RH33	24366103	CF, 10k ohm
RM07	24366103	CF, 10k ohm
RN02	24366102	CF, 1k ohm
RN05	24366392	CF, 3900 ohm
RN08	24366103	CF, 10k ohm
RR01	24366102	CF, 1k ohm
RR06	24366391	CF, 390 ohm

Location No.	Part No.	Description
RV01	24366821	CF, 820 ohm
RV02	24366102	CF, 1k ohm
RV03	24366472	CF, 4700 ohm
RV04	24366473	CF, 47k ohm
RV07	24552750	OMF, 75 ohm, 1/2W
RV08	24366331	CF, 330 ohm
RV09	24366393	CF, 39k ohm
RV10	24366472	CF, 4700 ohm
RV11	24366392	CF, 3900 ohm
RV12	24366101	CF, 100 ohm
RV13	24366223	CF, 22k ohm
RV14	24366104	CF, 100k ohm
RV15	24366471	CF, 470 ohm
RV16	24366101	CF, 100 ohm
RV17	24366104	CF, 100k ohm
RV18	24366223	CF, 22k ohm
RV19	24366471	CF, 470 ohm
RV21	24366622	CF, 6200 ohm
RV27	24366473	CF, 47k ohm
RV28	24366473	CF, 47k ohm
RV29	24366472	CF, 4700 ohm
RV30	24366102	CF, 1k ohm
RV33	24366472	CF, 4700 ohm
RV34	24366103	CF, 10k ohm
RV39	24366910	CF, 91 ohm
RV40	24366560	CF, 56 ohm
RV41	24366103	CF, 10k ohm
RV42	24366750	CF, 75 ohm
RV43	24366510	CF, 51 ohm
RV44	24366510	CF, 51 ohm
RV45	24366510	CF, 51 ohm
RV46	24366101	CF, 100 ohm
RV60	24366220	CF, 22 ohm
RV61	24366220	CF, 22 ohm
RV62	24366220	CF, 22 ohm
RV63	24366622	CF, 6200 ohm
RV64	24366622	CF, 6200 ohm
RV65	24366104	CF, 100k ohm
RV68	24366471	CF, 470 ohm
RV69	24366223	CF, 22k ohm
RV70	24366273	CF, 27k ohm
RV71	24366752	CF, 7500 ohm
RV74	24366564	CF, 560k ohm
RX02	24366102	CF, 1k ohm
RX05	24366101	CF, 100 ohm
RX08	24366101	CF, 100 ohm
RX10	24366101	CF, 100 ohm
RX13	24366102	CF, 1k ohm

COILS & TRANSFORMERS

L102	23262819	Coil, PIF, TRF1071D
L103	23238714	Coil, Peaking, TRF4100AJ
L105	23237993	Coil, Peaking, TRF4339AC
L107	23237987	Coil, Peaking, TRF4100AC
L108	23237987	Coil, Peaking, TRF4100AC
L151	23262813	Coil, IF, TRF1077D
L152	23262813	Coil, IF, TRF1077D
L162	23262951	Coil, RF Choke, TRF1019
L201	23238508	Coil, Peaking, TRF4121AJ
L311	23103901	Coil (Ferrite Bead), TEM2017
L315	23238714	Coil, Peaking, TRF4100AJ
L406	23103859	Coil (Ferrite Bead), TEM2011
L411	23233070	Coil, Linearity, TLN2111G
L412	23221968	Coil, Choke, TLN3010

Location No.	Part No.	Description
L441	23238934	Coil, Peaking, TRF4109AC
⚠L462	----------	DY, Supplied with V901
L503	23238714	Coil, Peaking, TRF4100AJ
L551	23250972	Coil, 1H-Delay Matching, TRF5418D
L590	23289221	Coil, Peaking, TRF4221AF
L591	23238922	Coil, Peaking, TRF4100AC
L601	23237986	Coil, Peaking, TRF4120AC
L651	23232946	Coil, Variable, TRF3073D
L801	23221050	Coil, RF Choke, TLN1015
L802	23103859	Coil (Ferrite Bead), TEM2011
L803	23221747	Coil, Choke, TRF9253D
L804	23221747	Coil, Choke, TRF9253D
L805	23222694	Coil, Width, TLN2026
L806	23103859	Coil (Ferrite Bead), TEM2011
L807	23222694	Coil, Width, TLN2026
⚠L901	23200696	Coil, Degaussing, TSB-2293AT
LA01	23238562	Coil, Peaking, TRF4109AJ
LA02	23221803	Coil, Choke, TLN3040D
LB01	23262778	Coil, IF, TRF1112
LF02	23238920	Coil, Peaking, TRF4150AC
LF03	23238934	Coil, Peaking, TRF4109AC
LN02	23238712	Coil, Peaking, TRF4150AJ
LV01	23238714	Coil, Peaking, TRF4100AJ
⚠T401	23224983	Transformer, Horiz. Drive, TLN1039
⚠T461	23236425	Transformer, Flyback, AT2079/17
⚠T801	23211644	Line Filter, TRF3118G
⚠T803	23217074	Transformer, Converter, 47003593
TN01	23232880	Coil, Variable, TRF3505D
TN02	23262843	Coil, PIF Trap, TRF1457D

SEMICONDUCTORS

IC101	23318201	IC, T51496P
IC303	23119548	IC, AN5515
IC408	23319203	IC, MC7812CT
IC501	B0379470	IC, TA8659N
IC661	23319944	IC, TDA7056A
IC801	23318232	IC, TDA4601
IC807	23318299	IC, L78MR05
ICA01	23904069	IC, M34300-680SP
ICA02	23318482	IC, M6M80011AP
ICA04	23119441	IC, LA7910
ICF01	23904016	IC, SAA5231/V8
ICF02	23318383	IC, SAA5243P/E
ICF03	23904315	IC, BR6265-12LL
ICF04	23319790	IC, SC68HC05C8B
ICH01	23119139	IC, AN5862K
ICV01	23319028	IC, NJM2245L
ICV02	70128382	IC, NJM2234S
Q103	A6534053	Transistor, 2SA1015-Y(TE)
Q104	A6317440	Transistor, 2SC1815-Y
Q161	A6708871	Transistor, 2SC388ATM
Q162	A6708871	Transistor, 2SC388ATM
Q201	23114689	Transistor, BC547A
Q202	23114691	Transistor, BC557A
Q203	23114689	Transistor, BC547A
Q204	A6041876	Transistor, 2SK117-GR FA-2
Q206	23114689	Transistor, BC547A
Q363	23114689	Transistor, BC547A
Q402	A6330069	Transistor, 2SC2482 FA-1
⚠Q404	23314375	Transistor, ON4409(508D)

Location No.	Part No.	Description
Q505	A6363200	Transistor, 2SC3619
Q506	23114689	Transistor, BC547A
Q507	A6363200	Transistor, 2SC3619
Q508	23114689	Transistor, BC547A
Q509	A6363200	Transistor, 2SC3619
Q510	23114689	Transistor, BC547A
Q514	23114688	Transistor, BC327
Q590	23114689	Transistor, BC547A
Q602	A6317440	Transistor, 2SC1815-Y
Q604	A6317440	Transistor, 2SC1815-Y
Q696	23114546	Transistor, BC557B
Q697	23114689	Transistor, BC547A
Q698	A6342206	Transistor, 2SC2878-A(TE)
Q699	23114691	Transistor, BC557A
Q802	A6871313	Transistor, 2SD1556(E)
Q803	23314246	Transistor, 2SC2023 LF-4
Q804	A6547303	Transistor, 2SA1321
Q805	A6325067	Transistor, 2SC2230A-Y
Q806	23114546	Transistor, BC557B
Q808	A6547250	Transistor, 2SA1320
QA05	23114689	Transistor, BC547A
QA06	23114689	Transistor, BC547A
QA07	23114689	Transistor, BC547A
QA09	23114691	Transistor, BC557A
QA10	23114689	Transistor, BC547A
QA11	23114546	Transistor, BC557B
QB01	23114689	Transistor, BC547A
QB02	23114689	Transistor, BC547A
QF06	A6335477	Transistor, 2SC2712-Y
QF07	A6335477	Transistor, 2SC2712-Y
QF08	A6361760	Transistor, 2SC3437-O
QF09	A6361760	Transistor, 2SC3437-O
QF10	A6361760	Transistor, 2SC3437-O
QF80	23314374	Transistor, BD945
QF81	23314374	Transistor, BD945
QH03	23114689	Transistor, BC547A
QH04	23114689	Transistor, BC547A
QH05	23114689	Transistor, BC547A
QV03	23114689	Transistor, BC547A
QV06	23114689	Transistor, BC547A
QV07	23114689	Transistor, BC547A
QV10	23114689	Transistor, BC547A
QV11	A6342206	Transistor, 2SC2878-A(TE)
D201	23115599	Diode, 1N4148
D202	23115599	Diode, 1N4148
D241	A7150041	Diode, 1SS104
D302	23118479	Diode, BYD33J
D305	23118479	Diode, BYD33J
D314	23316332	Diode, Zener, UZ12BSA
D315	A7116715	Diode, Zener, 04AZ7.5Y
D367	23115599	Diode, 1N4148
D401	23316325	Diode, Zener, UZ9.1BSC
D402	23316348	Diode, Zener, UZ20BSB
D403	23316333	Diode, Zener, UZ12BSB
D406	23118479	Diode, BYD33J
D408	23118479	Diode, BYD33J
D410	23316321	Diode, Zener, UZ8.2BSB
D590	23115599	Diode, 1N4148
D594	23115599	Diode, 1N4148
D595	23115599	Diode, 1N4148
D661	23115599	Diode, 1N4148
D662	23115599	Diode, 1N4148
D693	23115599	Diode, 1N4148
D694	23115599	Diode, 1N4148

Location No.	Part No.	Description
D695	23115599	Diode, 1N4148
D696	23115599	Diode, 1N4148
D697	23115599	Diode, 1N4148
D698	23115599	Diode, 1N4148
D699	23115599	Diode, 1N4148
⚠D803	23118124	Diode, LB-156 (LF-B)
D805	23118479	Diode, BYD33J
D806	23118479	Diode, BYD33J
D807	23118479	Diode, BYD33J
D808	23118736	Diode, BYV96E
D809	23118451	Diode, RU-4A
D810	23118479	Diode, BYD33J
D811	23118479	Diode, BYD33J
D812	23316312	Diode, Zener, UZ6.2BSB
D813	23118052	Diode, RU4Z
DA01	23115599	Diode, 1N4148
DA06	23115599	Diode, 1N4148
DA15	23115599	Diode, 1N4148
DA16	23115599	Diode, 1N4148
DA17	23115599	Diode, 1N4148
DA20	23115599	Diode, 1N4148
DA21	23115599	Diode, 1N4148
DA22	23115599	Diode, 1N4148
DA27	23115599	Diode, 1N4148
DA28	23115599	Diode, 1N4148
DA30	23115878	Diode, Zener, μPC574J, (L)
DA31	23115599	Diode, 1N4148
DA33	23115599	Diode, 1N4148
DA34	23115599	Diode, 1N4148
DE40	A8636541	Diode (LED), TLS153, Red
DE41	A8606431	Diode (LED), TLG153, Green
DF01	A7150258	Diode, 1SS176
DF02	A7150258	Diode, 1SS176
DF03	A7150258	Diode, 1SS176
DF80	23316335	Diode, Zener, UZ13BSA
DF81	23316309	Diode, Zener, UZ5.6BSB
DH01	23115599	Diode, 1N4148
DH02	23115599	Diode, 1N4148
DH03	23115599	Diode, 1N4148
DH04	23115599	Diode, 1N4148
DH05	23115599	Diode, 1N4148
DH06	23115599	Diode, 1N4148
DH07	23316302	Diode, Zener, UZ4.7BSB
DH08	23115599	Diode, 1N4148
DH11	23115599	Diode, 1N4148
DH12	23115599	Diode, 1N4148
DV02	23115599	Diode, 1N4148
DV03	23316302	Diode, Zener, UZ4.7BSB
DV04	23316324	Diode, Zener, UZ9.1BSB
DV05	23115599	Diode, 1N4148
DV06	23115599	Diode, 1N4148
DV07	23115599	Diode, 1N4148
DV11	23316332	Diode, Zener, UZ12BSA

MISCELLANEOUS

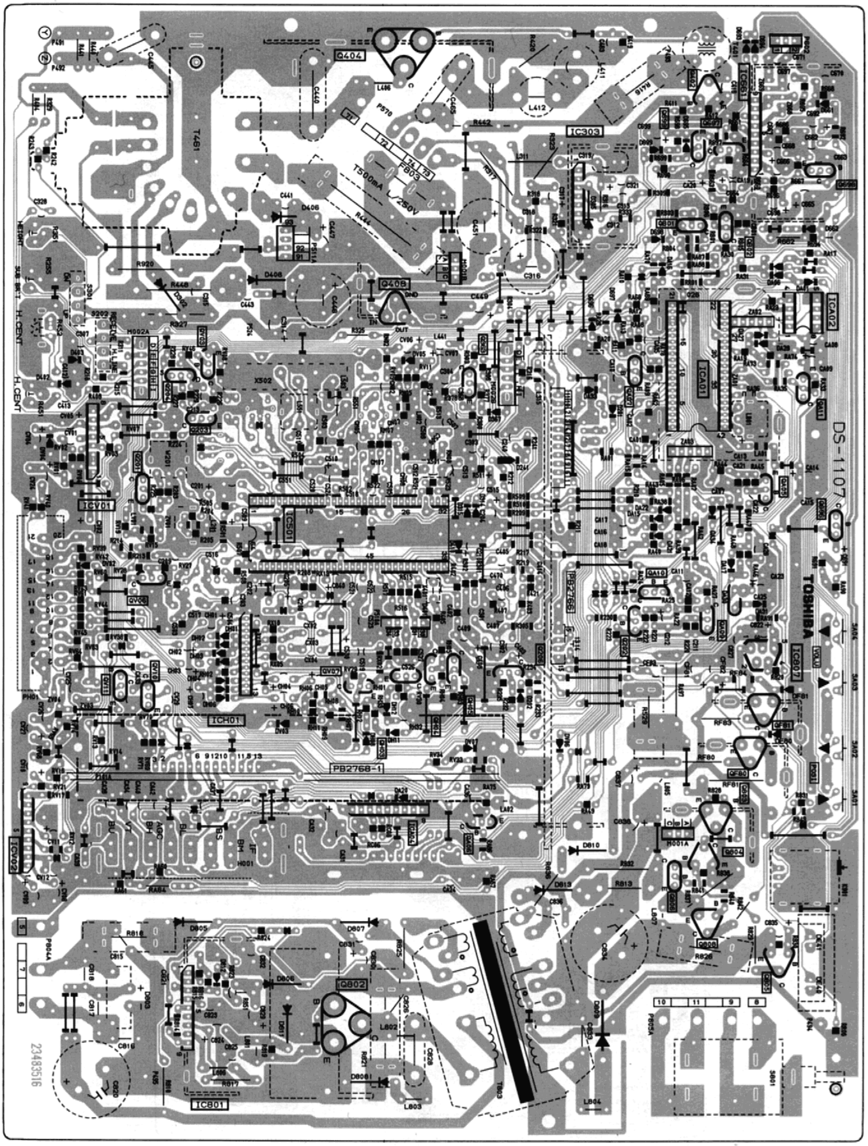
⚠F801	23144896	Fuse, 2.0A
F801A	23165433	Holder, Fuse
⚠F803	23144876	Fuse, 0.5A
F803A	23165433	Holder, Fuse
K901	23120220	Remote Sensor, IR-9109A-K
⚠P801	23176705	Power Cord
P803	23164725	Plug, 2P
PF01	23367684	Plug, 11P
PF02	23367677	Plug, 4P

Location No.	Part No.	Description
PH01	23365598	21 Pin Connector
S202	23145542	Switch, Lever, 1C3P
S301	23145682	Switch, Lever, 1C3P
S801	23145434	Switch, Power, 2C2P
SA01	23145430	Switch, Push, 1C1P
SA02	23145430	Switch, Push, 1C1P
SA03	23145430	Switch, Push, 1C1P
SA04	23145430	Switch, Push, 1C1P
⚠V901A	23902022	Socket, CRT, 8P
W201	23250871	Delay Line, TRF2083B
W661	23351079	Speaker, SPK-1351, 77x77mm, 16 ohm
X401	23153886	Ceramic Resonator, 503kHz, TCR1012
X501	23153979	Crystal, 4.43MHz
X502	23153357	1H Delay-Line, EFDED645A91M
XF01	23153384	Crystal, 13.875MHz
XF02	23153379	Crystal, 6.000MHz
XF03	23153011	Ceramic Resonator, TCR1050
Z101	A5611192	PIF SAW Filter, F1037C
Z102	23107915	Ceramic Video Trap, 5.5 to 5.7MHz, TCF1017
Z103	23107913	Ceramic Video Trap, 6.5MHz, TCF1018
Z603	23107947	Ceramic Filter, 5.5MHz, SFE5.5MBF
Z668	23107742	Filter, TEM1014
Z669	23107742	Filter, TEM1014
ZA01	23153011	Ceramic Resonator, TCR1050
ZA02	24000788	Resistor Block, 4700 ohmx4, 1/8W
ZA03	24094651	Capacitor Block, 100pFx4, 50V
ZF01	23107746	Filter, 3MHz, TEM1010
ZV01	23107849	Ceramic Video Trap, 4.43MHz, TCF1032
ZV03	23107744	Filter, 3MHz, TEM1012
ZV04	23107742	Filter, TEM1014
PC BOARD ASSEMBLIES		
U902A	23369632	Main Board, PB2767
U903A	23369633	PIF Board, PB2768-1
U903B	23369634	CRT Drive Board, PB2768-2
U903C	23369635	Power Board, PB2768-3
Y991Z(UF01)	23791028	Text Board, PB2766
PICTURE TUBE		
⚠V901	23312212	Picture Tube, A41EAM11X01
TUNER		
H001	23121561	Tuner, VHF/UHF, EG438
ACCESSORIES		
K902	23120093	Remote Hand Unit, CT-9617
AT03	23305360	Battry Cover
Y101	23561882	Owner's Manual, German, 1730TD

Location No.	Part No.	Description

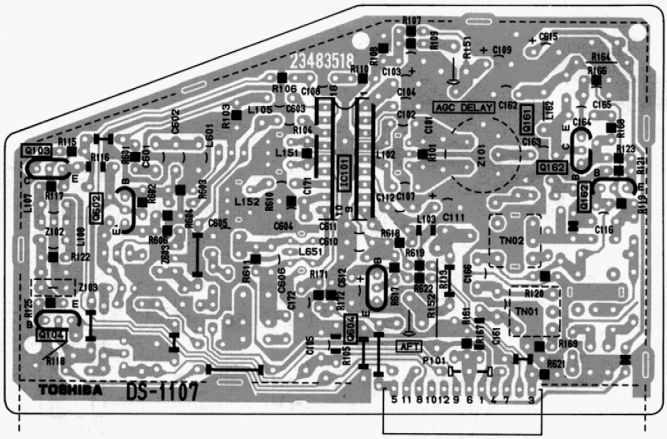
MAIN BOARD PB2767

BOTTOM (FOIL) SIDE



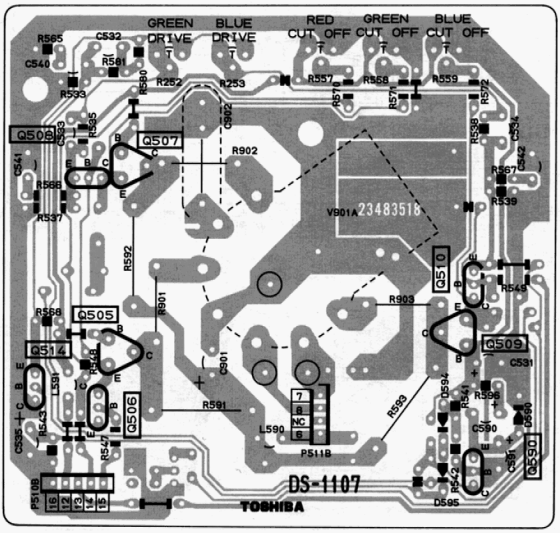
PIF/SIF BOARD PB2768-1

BOTTOM (FOIL) SIDE



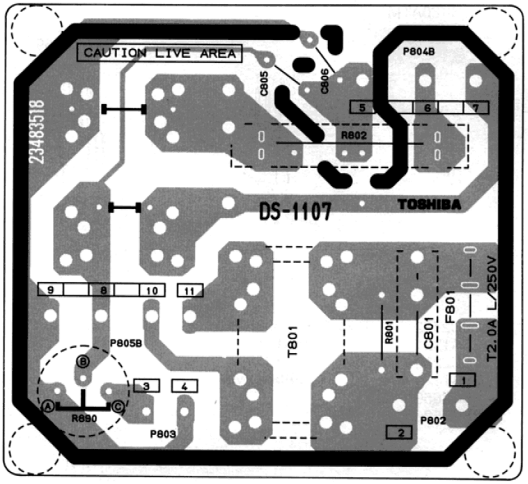
CRT DRIVE BOARD PB2768-2

BOTTOM (FOIL) SIDE



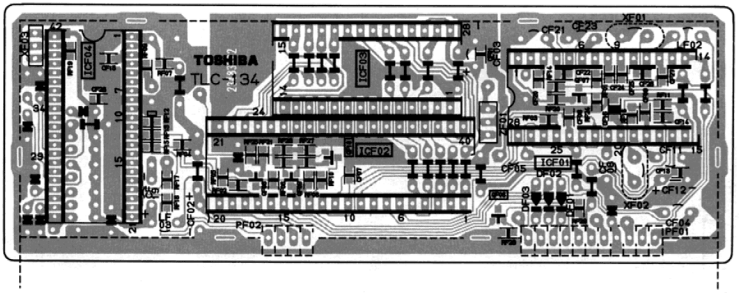
POWER BOARD PB2768-3

BOTTOM (FOIL) SIDE



TEXT BOARD PB2766

BOTTOM (FOIL) SIDE

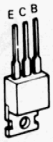


TERMINAL VIEW OF TRANSISTORS

① BC327
BC337
BC547A
BC547B
BC547C
BC557A
BC557B
BC556A

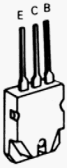
② 2SK30ATM
2SK117

③ BD202

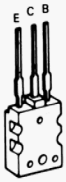


④ BF871
2SD553
2SC1569

⑤ 2SC3678
2SC3182N



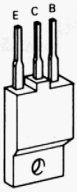
⑥ 2SD1427
2SD1426



⑦ 2SC2482
2SA1321
2SC2230
2SA1020
2SC2655
2SC752GTM

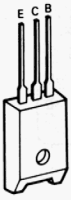
⑧ 2SC388ATM
2SA1015
2SC1959
2SA562TM

⑨ 2SD1548



⑩ 2SC2023

⑪ ON4409



1730TD

SCHEMATIC DIAGRAM (1/2)

U902A MAIN BOARD PB2767

U903A P1F/S1F BOARD PB2768-1

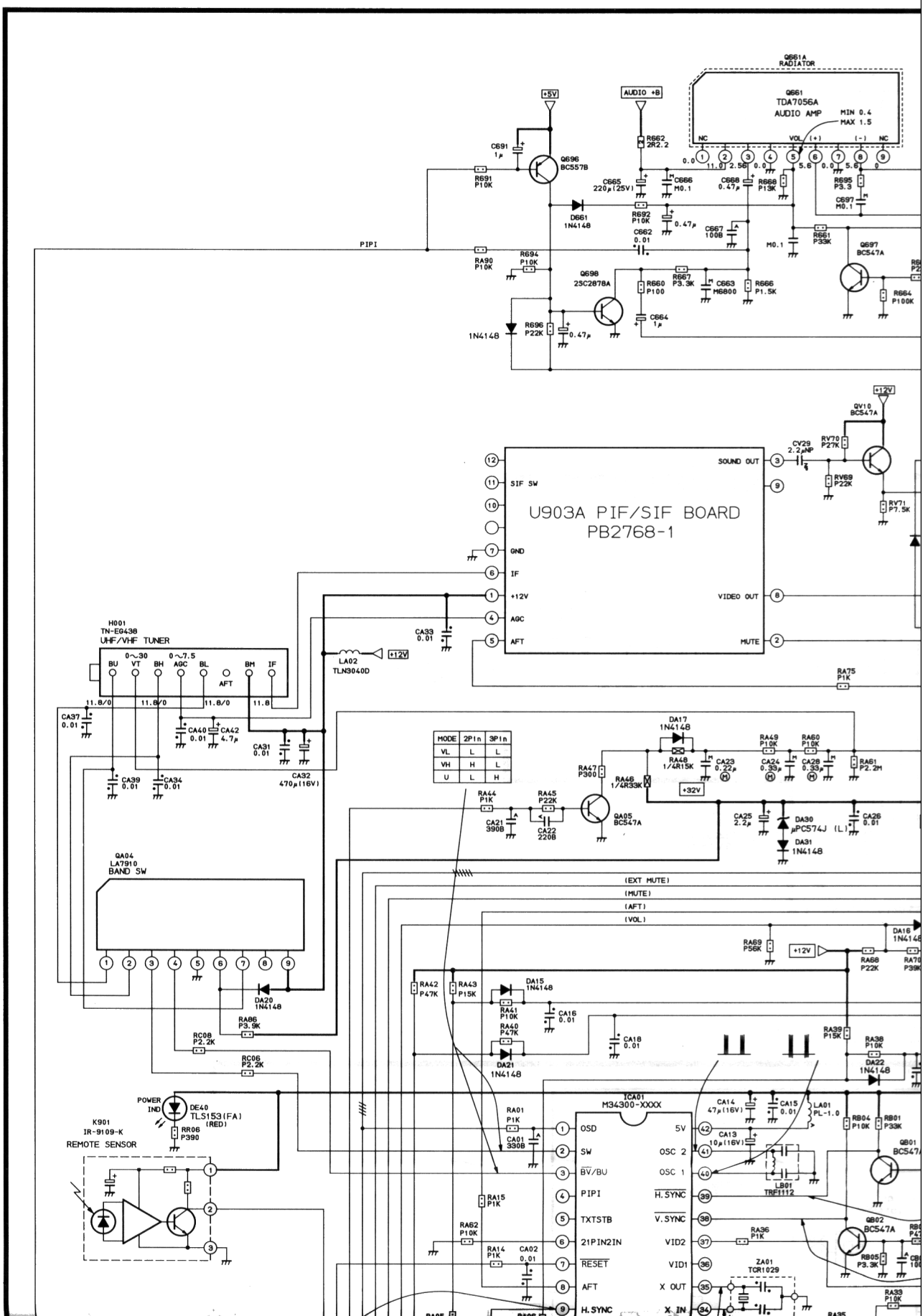
U903B CRT DRIVE BOARD PB2768-2

UF01 TEXT BOARD PB2766-4

LIVE AREA

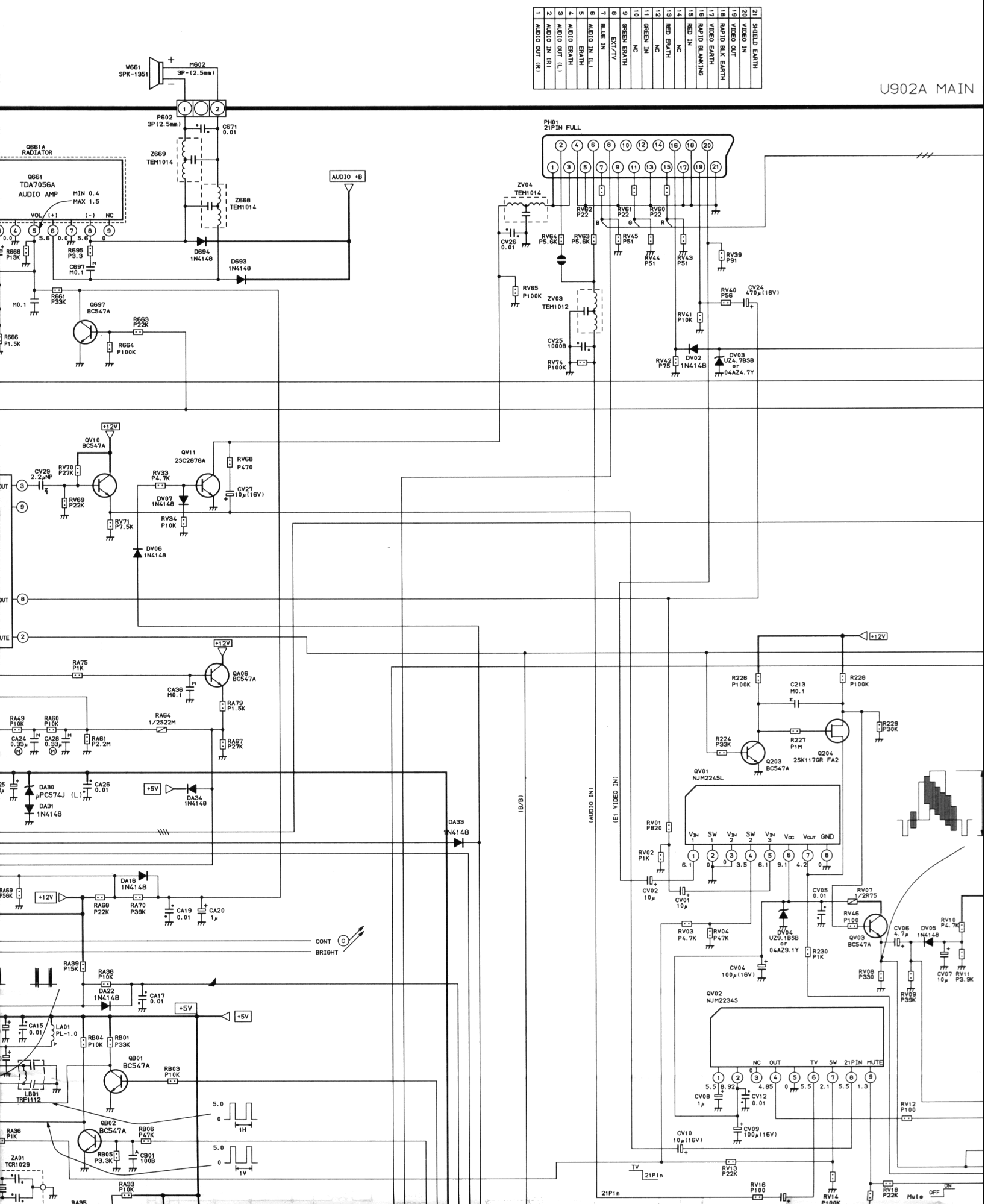
1730TD

SCHEMATIC DIAGRAM (1/2)

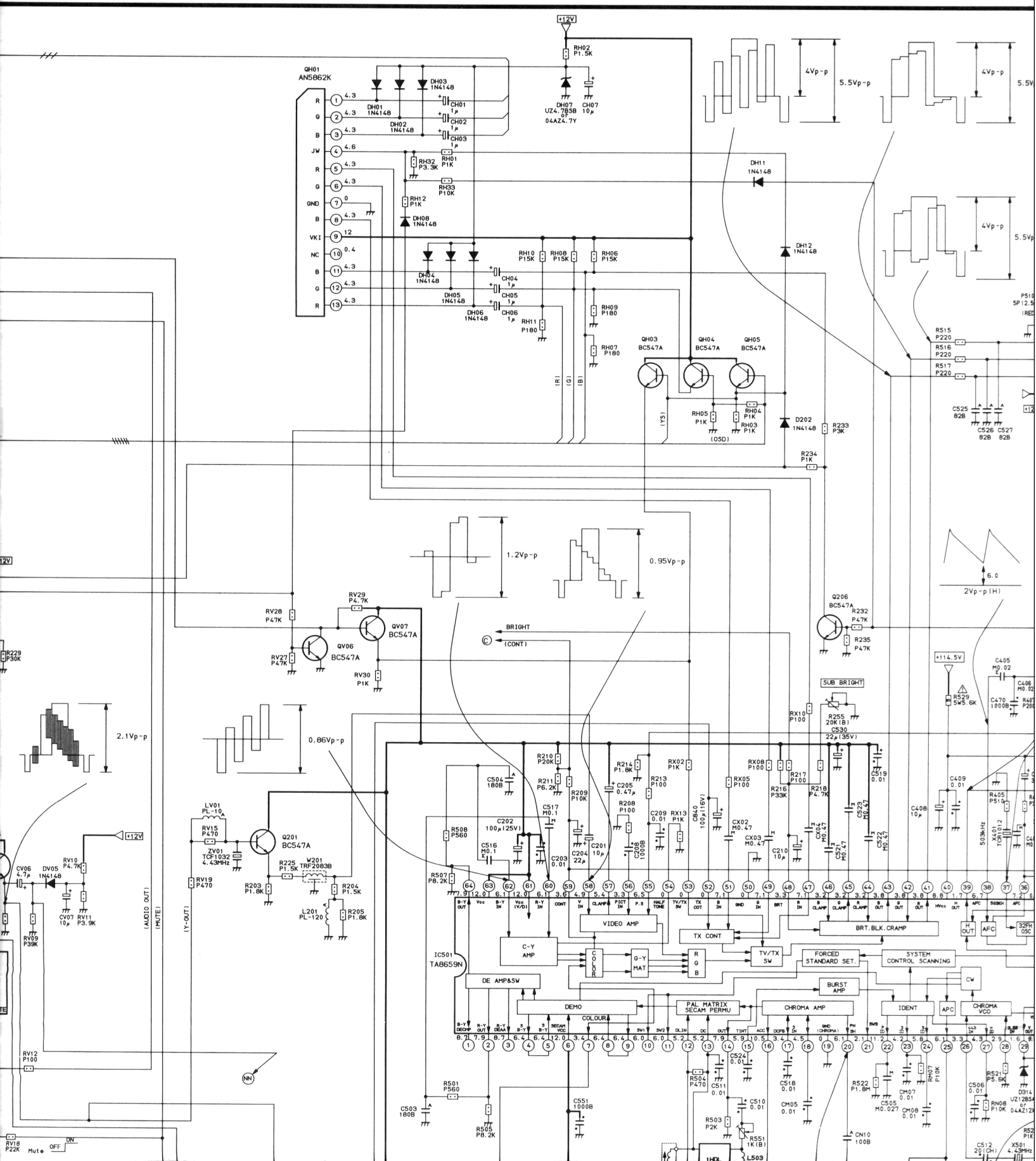


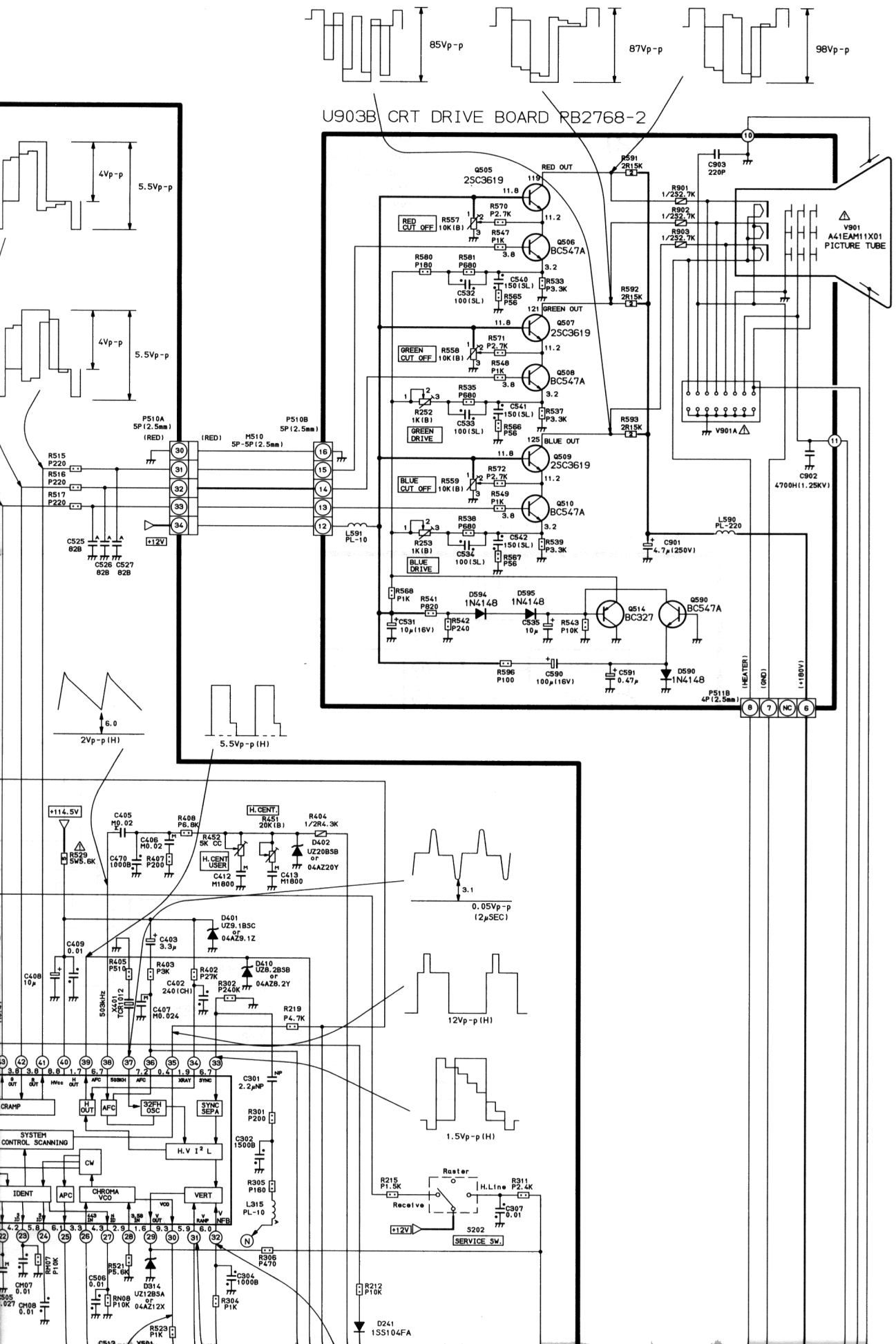
(1/2)

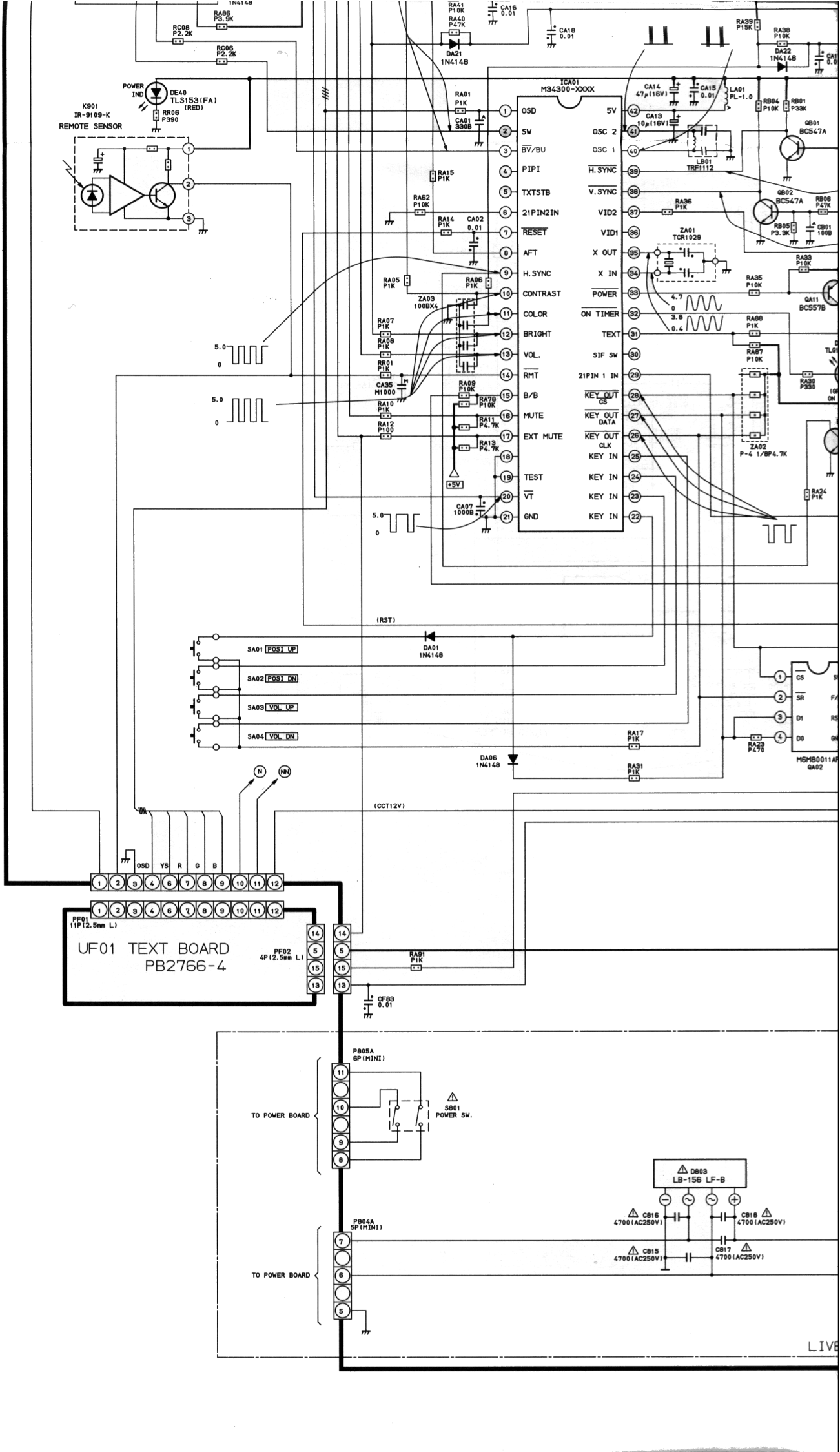
U902A MAIN

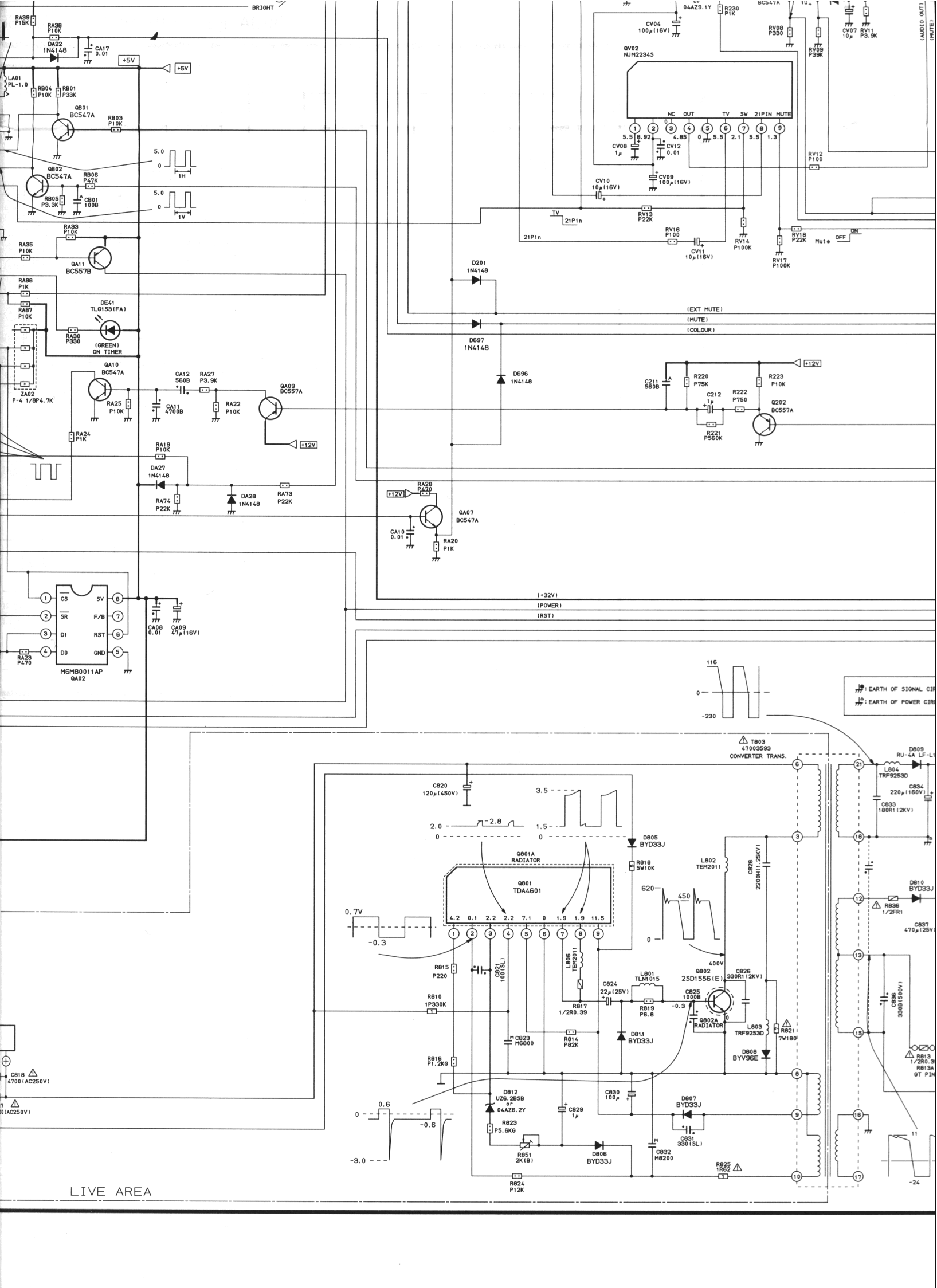


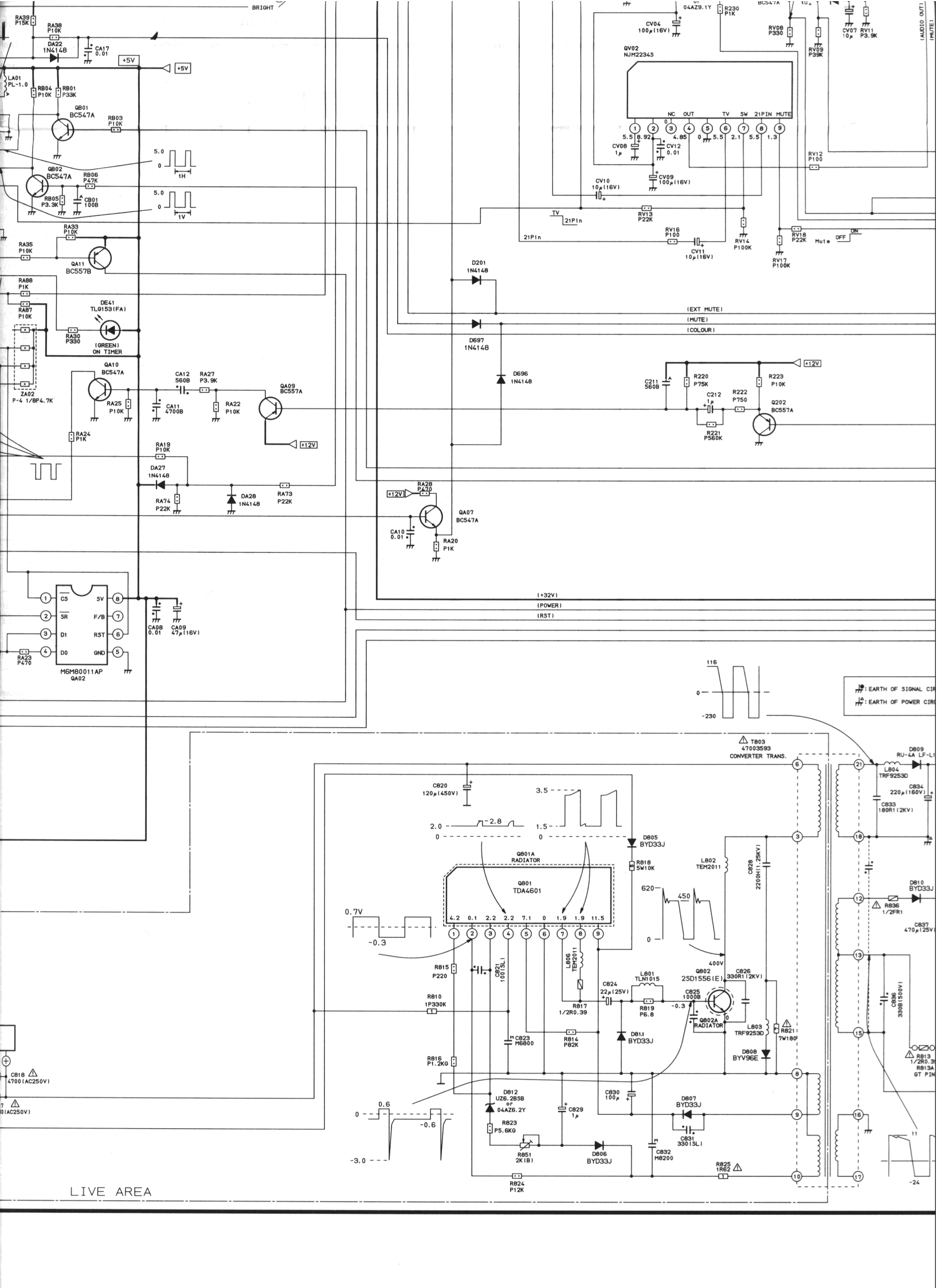
U902A MAIN BOARD PB2767

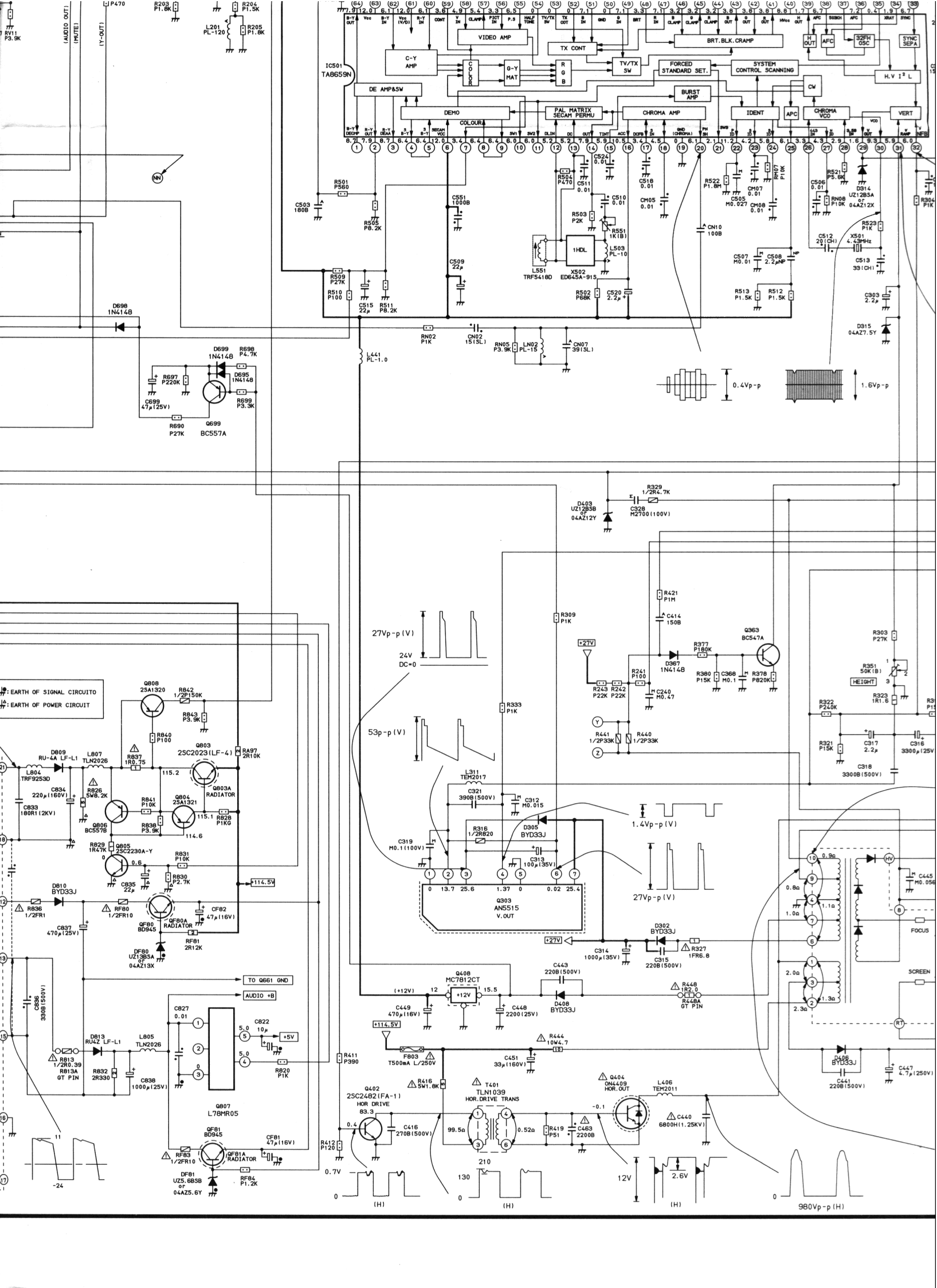


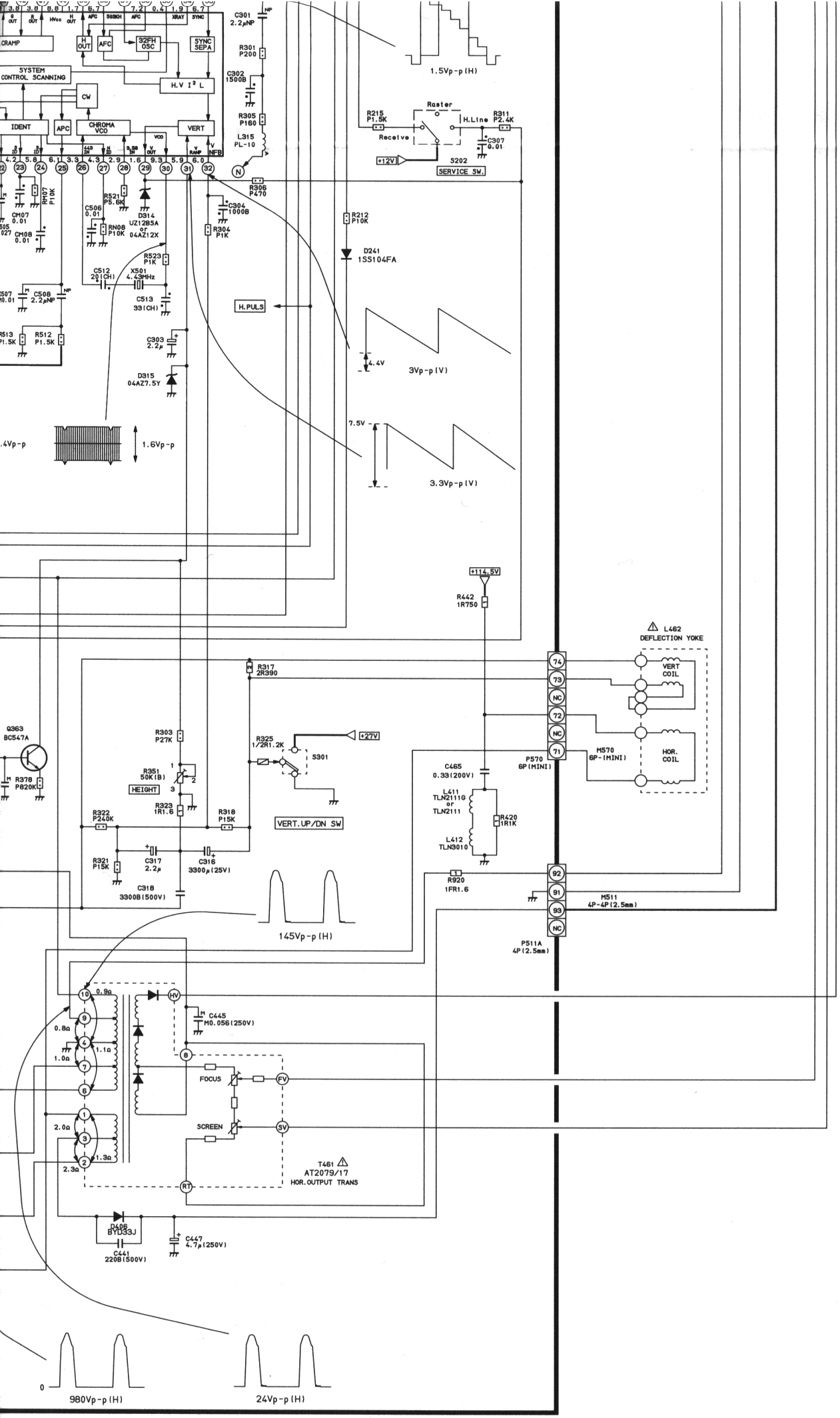

85Vp-p
87Vp-p
98Vp-p
U903B CRT DRIVE BOARD PB2768-2
4Vp-p
5.5Vp-p
4Vp-p
5.5Vp-p
P510A 5P(2.5mm) (RED)
P510B 5P(2.5mm)
M510 5P-5P(2.5mm)
R515 P220
R516 P220
R517 P220
C525 82B
C526 82B
C527 82B
+12V
L591 PL-10
Q505 2SC3619
RED OUT
R570 P2.7K
RED CUT OFF R557 10K(B)
R547 P1K
Q506 BC547A
R580 P180
R581 P680
C532 100(SL)
C540 150(SL)
R533 P3.3K
R565 P56
GREEN OUT
Q507 2SC3619
R571 P2.7K
GREEN CUT OFF R558 10K(B)
R548 P1K
Q508 BC547A
R535 P680
R252 1K(B)
C533 100(SL)
C541 150(SL)
R537 P3.3K
R566 P56
GREEN DRIVE
BLUE OUT
Q509 2SC3619
R572 P2.7K
BLUE CUT OFF R559 10K(B)
R549 P1K
Q510 BC547A
R538 P680
R253 1K(B)
C534 100(SL)
C542 150(SL)
R539 P3.3K
R567 P56
BLUE DRIVE
R591 2R15K
R592 2R15K
R593 2R15K
R901 1/252.7K
R902 1/252.7K
R903 1/252.7K
C903 220P
V901 A41EAM11X01 PICTURE TUBE
V901A
C902 4700H(1.25KV)
L590 PL-220
C901 4.7μ(250V)
R568 P1K
R541 P820
D594 1N4148
D595 1N4148
Q514 BC327
Q590 BC547A
C531 10μ(16V)
R542 P240
C535 10μ
R543 P10K
R596 P100
C590 100μ(16V)
C591 0.47μ
D590 1N4148
P511B 4P(2.5mm)
(HEATER)
(GND)
(+180V)
NC
6.0
2Vp-p(H)
5.5Vp-p(H)
+114.5V
R529 5W5.6K
C405 M0.02
R408 P6.8K
C406 M0.02
C470 1000B
R407 P200
H.CENT. R451 20K(B)
R452 5K CC
H.CENT USER
C412 M1800
C413 M1800
R404 1/2R4.3K
D402 UZ20BSB or 04AZ20Y
3.1
0.05Vp-p (2μSEC)
C409 0.01
C408 10μ
D401 UZ9.1BSC or 04AZ9.1Z
C403 3.3μ
R405 P510
R403 P3K
R402 P27K
C402 240(CH)
R302 P240K
D410 UZ8.2BSB or 04AZ8.2Y
503kHz
X401 TOR1012
C407 M0.024
R219 P4.7K
12Vp-p(H)
1.5Vp-p(H)
CRAMP
H OUT
AFC
32FH OSC
SYNC SEPA
C301 2.2μNP
R301 P200
C302 1500B
R305 P160
L315 PL-10
SYSTEM CONTROL SCANNING
CW
H.V I²L
IDENT
APC
CHROMA VCO
VERT
R306 P470
Raster
R215 P1.5K
Receive
H.Line
R311 P2.4K
C307 0.01
+12V
S202
SERVICE SW.
C506 0.01
RN08 P10K
D314 UZ12BSA or 04AZ12X
R521 P5.6K
C304 1000B
R304 P1K
R523 P1K
R212 P10K
D241 1SS104FA
CM07 0.01
CM08 0.01
RN07 P10K


ICA01
M34300-XXXX
OSD
SW
BV/BU
PIPI
TXTSTB
21PIN2IN
RESET
AFT
H.SYNC
CONTRAST
COLOR
BRIGHT
VOL.
RMT
B/B
MUTE
EXT MUTE
TEST
VT
GND
5V
OSC 2
OSC 1
H.SYNC
V.SYNC
VID2
VID1
X OUT
X IN
POWER
ON TIMER
TEXT
SIF SW
21PIN 1 IN
KEY OUT CS
KEY OUT DATA
KEY OUT CLK
KEY IN
KEY IN
KEY IN
KEY IN
POWER IND
DE40
TLS153(FA)
(RED)
RR06
P390
K901
IR-9109-K
REMOTE SENSOR
SA01 POSI UP
SA02 POSI DN
SA03 VOL UP
SA04 VOL DN
DA01
1N4148
DA06
1N4148
DA21
1N4148
DA22
1N4148
(RST)
(CCT12V)
OSD YS R G B
PF01
11P(2.5mm L)
PF02
4P(2.5mm L)
UF01 TEXT BOARD
PB2766-4
P805A
6P(MINI)
TO POWER BOARD
S801
POWER SW.
P804A
5P(MINI)
TO POWER BOARD
D803
LB-156 LF-B
C816
4700(AC250V)
C818
4700(AC250V)
C815
4700(AC250V)
C817
4700(AC250V)
LA01
PL-1.0
LB01
TRF1112
QB01
BC547A
QB02
BC547A
QA11
BC557B
ZA01
TCR1029
ZA02
P-4 1/8P4.7K
ZA03
100BX4
MSMB0011AF
QA02
5.0
0
3.8
0.4
4.7

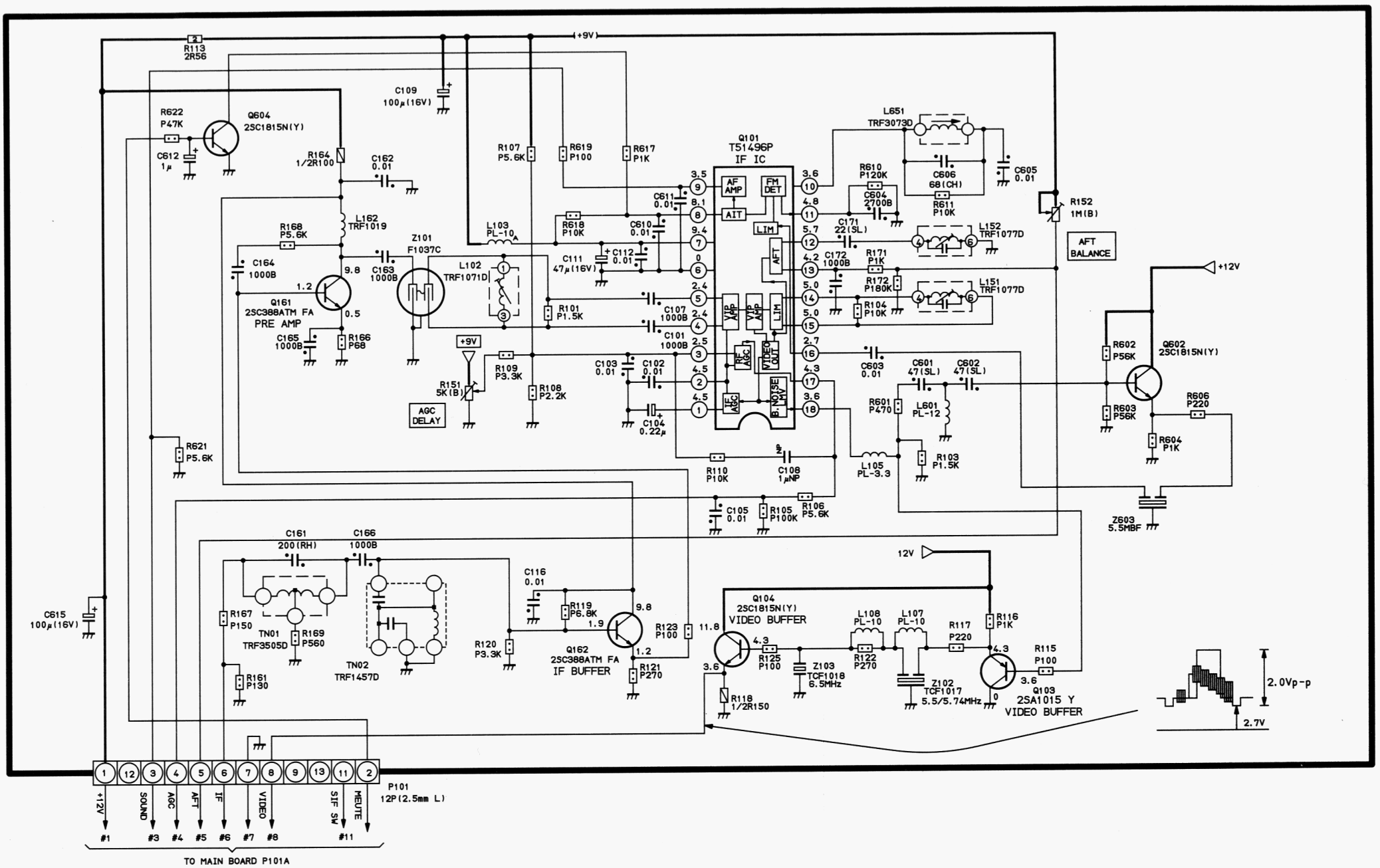

BRIGHT
+5V
QB01 BC547A
QB02 BC547A
QA11 BC557B
QA10 BC547A
QA09 BC557A
QA07 BC547A
DE41 TLG153(FA)
(GREEN) ON TIMER
ZA02 P-4 1/8P4.7K
M6M80011AP QA02
QV02 NJM22345
NC OUT TV SW 21PIN MUTE
TV 21PIn
21PIn
Mute ON OFF
D201 1N4148
D697 1N4148
D696 1N4148
DA22 1N4148
DA27 1N4148
DA28 1N4148
(EXT MUTE)
(MUTE)
(COLOUR)
(+32V)
(POWER)
(RST)
+12V
T803 47003593 CONVERTER TRANS.
Q801 TDA4601
Q801A RADIATOR
Q802A RADIATOR
Q802 2SD1556(E)
D805 BYD33J
D811 BYD33J
D806 BYD33J
D807 BYD33J
D808 BYV96E
D809 RU-4A LF-L1
D810 BYD33J
D812 UZ6.2B5B or 04AZ6.2Y
L801 TLN1015
L802 TEM2011
L803 TRF9253D
L804 TRF9253D
L806 TEM2011
LIVE AREA


BRIGHT
+5V
QB01 BC547A
QB02 BC547A
QA11 BC557B
QA10 BC547A
QA09 BC557A
QA07 BC547A
DE41 TLG153(FA)
(GREEN) ON TIMER
ZA02 P-4 1/8P4.7K
M6M80011AP QA02
QV02 NJM22345
NC OUT TV SW 21PIN MUTE
TV 21PIn
21PIn
Mute ON OFF
D201 1N4148
D697 1N4148
D696 1N4148
DA22 1N4148
DA27 1N4148
DA28 1N4148
(EXT MUTE)
(MUTE)
(COLOUR)
(+32V)
(POWER)
(RST)
+12V
T803 47003593 CONVERTER TRANS.
Q801 TDA4601
Q801A RADIATOR
Q802A RADIATOR
Q802 2SD1556(E)
D805 BYD33J
D811 BYD33J
D806 BYD33J
D807 BYD33J
D808 BYV96E
D809 RU-4A LF-L1
D810 BYD33J
D812 UZ6.2B5B or 04AZ6.2Y
L801 TLN1015
L802 TEM2011
L803 TRF9253D
L804 TRF9253D
L806 TEM2011
LIVE AREA

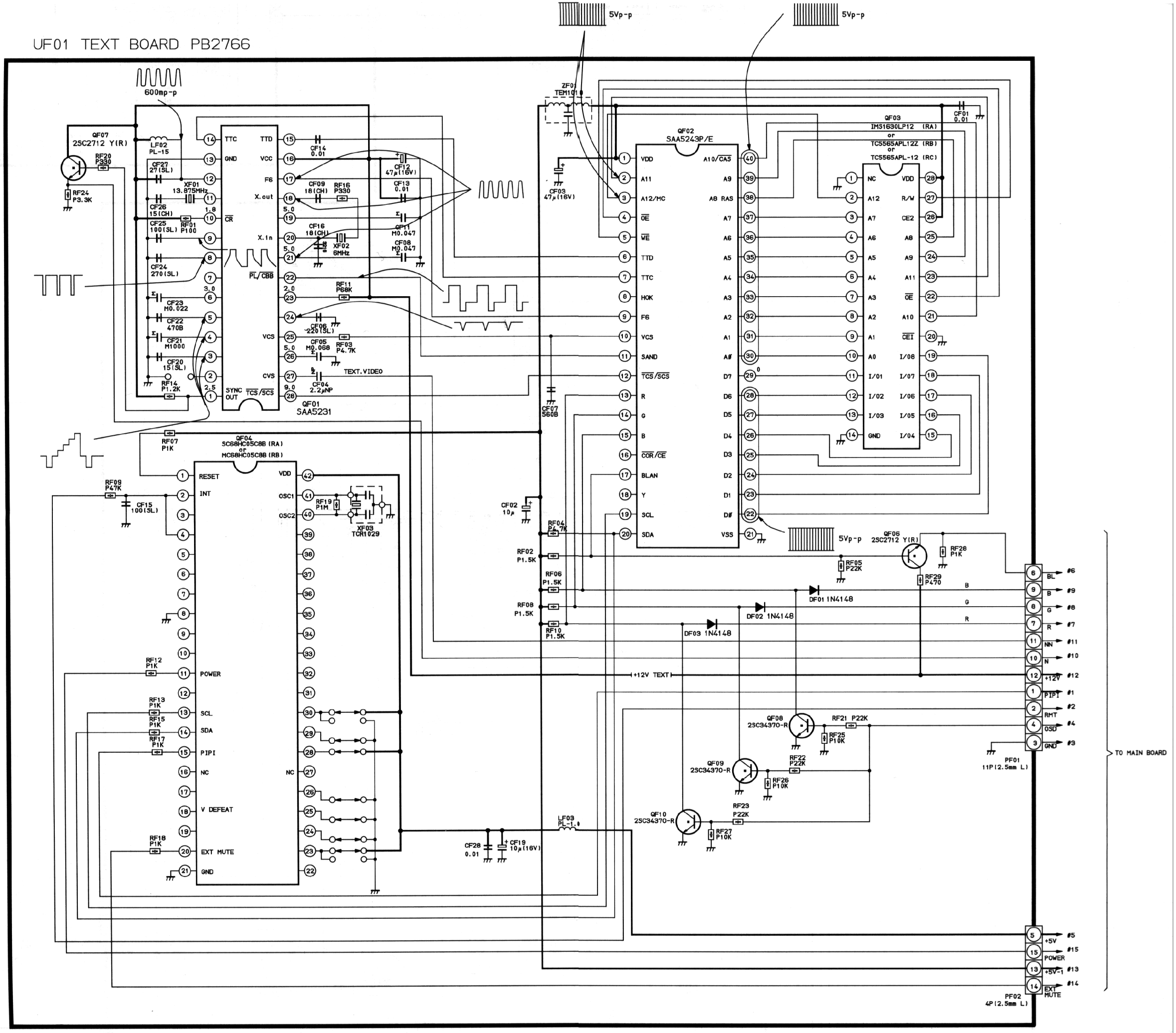

IC501
TA8659N
VIDEO AMP
TX CONT
BRT.BLK.CRAMP
C-Y AMP
COLOR
G-Y MAT
R G B
TV/TX SW
FORCED STANDARD SET.
SYSTEM CONTROL SCANNING
H.V I² L
DE AMP&SW
BURST AMP
CW
DEMO
COLOUR
PAL MATRIX SECAM PERMU
CHROMA AMP
IDENT
APC
CHROMA VCO
VERT
32FH OSC
SYNC SEPA
H OUT
AFC
1HDL
L551 TRF5418D
X502 ED645A-915
L503 PL-10
X501 4.43MHz
D314 UZ12B5A or 04AZ12X
D315 04AZ7.5Y
D698 1N4148
D699 1N4148
D695 1N4148
Q699 BC557A
L441 PL-1.0
0.4Vp-p
1.6Vp-p
D403 UZ12B5B or 04AZ12Y
27Vp-p(V)
24V DC=0
53p-p(V)
Q363 BC547A
D367 1N4148
HEIGHT
L311 TEH2017
D305 BYD33J
1.4Vp-p(V)
27Vp-p(V)
Q303 AN5515 V.OUT
0 13.7 25.6 1.37 0 0.02 25.4
D302 BYD33J
Q408 MC7812CT
D408 BYD33J
D406 BYD33J
F803 T500mA L/250V
Q402 2SC2482(FA-1) HOR DRIVE
T401 TLN1039 HOR.DRIVE TRANS
Q404 ON4409 HOR.OUT
L406 TEM2011
0.7V
210
130
12V
2.6V
980Vp-p(H)
: EARTH OF SIGNAL CIRCUITO
: EARTH OF POWER CIRCUIT
Q808 2SA1320
Q803 2SC2023(LF-4)
Q803A RADIATOR
Q804 2SA1321
Q806 BC557B
Q805 2SC2230A-Y
D809 RU-4A LF-L1
L804 TRF9253D
L807 TLN2026
D810 BYD33J
QF80 BD945
QF80A RADIATOR
DF80 UZ13B5A or 04AZ13X
RF81 2R12K
CF82 47μ(16V)
+114.5V
TO Q661 GND
AUDIO +B
D813 RU4Z LF-L1
L805 TLN2026
Q807 L78MR05
QF81 BD945
QF81A RADIATOR
DF81 UZ5.6B5B or 04AZ5.6Y
CF81 47μ(16V)
RF84 P1.2K
+5V
+27V
+12V
-24


SYSTEM CONTROL SCANNING
CW
IDENT
APC
CHROMA VCO
VERT
H.V I² L
H OUT
AFC
32FH OSC
SYNC SEPA
CRAMP
C301 2.2μNP
R301 P200
C302 1500B
R305 P160
L315 PL-10
1.5Vp-p(H)
Raster
R215 P1.5K
Receive
H.Line
R311 P2.4K
C307 0.01
+12V
S5202
SERVICE SW.
R306 P470
C304 1000B
R304 P1K
R212 P10K
D241 1SS104FA
H.PULS
4.4V
3Vp-p(V)
7.5V
3.3Vp-p(V)
D314 UZ12B5A or 04AZ12X
R521 P5.6K
RN08 P10K
C506 0.01
R523 P1K
X501 4.43MHz
C512 20(CH)
C513 33(CH)
C508 2.2μNP
R512 P1.5K
C303 2.2μ
D315 04AZ7.5Y
1.6Vp-p
+114.5V
R442 1R750
L462 DEFLECTION YOKE
VERT COIL
HOR. COIL
M570 6P-(MINI)
P570 6P(MINI)
R317 2R390
Q363 BC547A
R303 P27K
R325 1/2R1.2K
+27V
S301
R351 50K(B)
HEIGHT
R323 1R1.6
R322 P240K
R318 P15K
VERT.UP/DN SW
R321 P15K
C317 2.2μ
C316 3300μ(25V)
C318 3300B(500V)
C465 0.33(200V)
L411 TLN2111G or TLN2111
L412 TLN3010
R420 1R1K
R920 1FR1.6
145Vp-p(H)
M511 4P-4P(2.5mm)
P511A 4P(2.5mm)
0.9Ω
0.8Ω
1.0Ω
1.1Ω
2.0Ω
1.3Ω
2.3Ω
C445 M0.056(250V)
FOCUS
SCREEN
T461 AT2079/17 HOR.OUTPUT TRANS
D406 BYD33J
C441 220B(500V)
C447 4.7μ(250V)
980Vp-p(H)
24Vp-p(H)

U903A PIF/SIF BOARD PB2768-1



UF01 TEXT BOARD PB2766



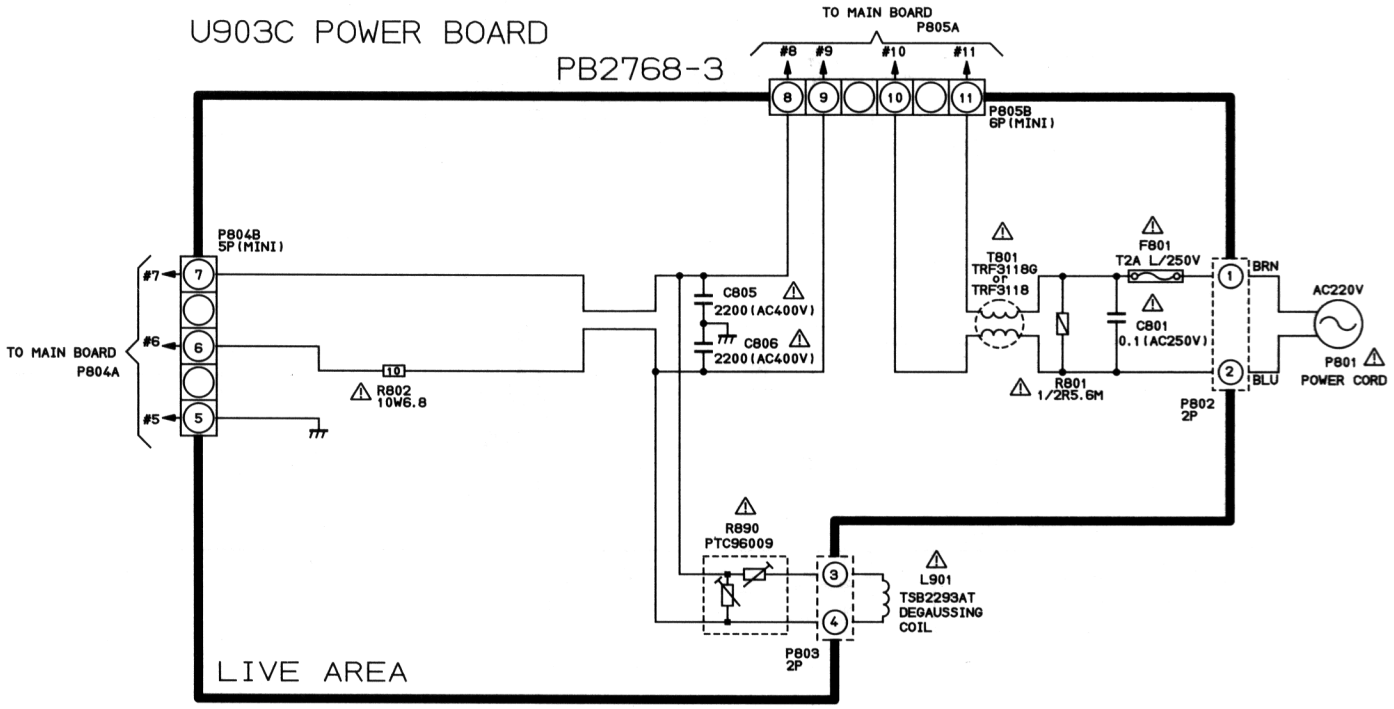
Suffixes to values:

TOLERANCE	MARK
±1%	(F)
±2%	(G)

Suffixes to VR values:

LAW	MARK
Linear	(B)
'C' Curve Characteristic	(C)

Rating Markings:

WATTAGE	MARK
1/6W	
1/4W	
1/2W	
1W	1
2W	2

WATTAGE	MARK
3W	3
5W	5
10W	10
15W	15
20W	20
25W	25